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APPENDICES

Appendix A

Engineering Calculations

McCarty (Sawyer and McCarty, 1978) approach for determining oxygen consumption assuming cell synthesis and no endogenous respiration

$$2C_6H_{14} + 3.5O_2 \rightarrow 2C_6H_{11}O_2 + 3H_2O \quad (9)$$

Therefore: approximately 3.5 moles of oxygen are required to oxidize 2 moles of hexane to 2 moles of hexanol. From Equation 10, 0.65 g of oxygen are required to oxidize 1 gram of hexane to hexanol.

$$\frac{3.5 \text{ mole } O_2 \times \frac{32 \text{g } O_2}{\text{mole } O_2}}{2 \text{ mole } C_6H_{14} \times \frac{86 \text{ g } C_6H_6}{\text{mole } C_6H_6}} = \frac{0.65 \text{ g } O_2}{\text{g } C_6H_6} \quad (10)$$

Using hexanol as a starting point:

$$CH_3CH_2CH_2CH_2CH_2COO^- + H_2O \rightarrow CO_2 + HCO_3^- \quad (11)$$

$$C_6H_{11}O_2^- + 11H_2O \rightarrow 5CO_2 + HCO_3^- + 32H^+ + 32e^- \quad (12)$$

$$\frac{1}{32}C_6H_{11}O_2^- + \frac{11}{32}H_2O \rightarrow \frac{5}{32}CO_2 + \frac{1}{32}HCO_3^- + H^+ + e^- \quad (13)$$

$f_s = 0.6$ for cell synthesis
$f_e = 0.4$ for energy requirements using oxygen as an electron acceptor

Half reaction for cell synthesis:

$$0.6\left(\frac{1}{5}CO_2 + \frac{1}{20}HCO_3^- + \frac{1}{20}NH_4^+ + H^+ + e^- \rightarrow \frac{1}{20}C_5H_7O_2N + \frac{9}{20}H_2O\right) \quad (14)$$

Half reaction for electron acceptor:

$$0.4\left(\frac{1}{4} + H^+ + e^- \rightarrow \frac{1}{2}H_2O\right) \quad (15)$$

Simplifying Equations 13,14, and 15:

$$.03125\,C_6H_{11}O_2^- + .344\,H_2O \rightarrow .156\,CO_2 + .03125\,HCO_3^- \quad (16)$$

$$.12\,CO_2 + .03\,HCO_3^- + .03NH_4^+ \rightarrow .03\,C_5H_7O_2N + .27\,H_2O \quad (17)$$

$$.10_2 \rightarrow .2\,H_2O \quad (18)$$

Combining Equations 16, 17, and 18 results in the overall reaction:

$$0.03125\,C_6H_{11}O_2^- + 0.1\,O_2 + .03\,NH_4^+ \rightarrow .036\,CO_2 + 0.126\,H_2O + .001\,HCO_3^- + .03\,C_5H_7O_2N \quad (19)$$

The oxygen equivalent for the biodegradation of hexanol is 0.89 g oxygen per gram of hexanol (Equation 21):

$$\frac{0.1 \text{ moles } O_2 \times \frac{32 \text{ g } O_2}{\text{mole } O_2}}{0.03125 \text{ mole } C_6H_{11}O_2^- \times \frac{115 \text{ g } C_6H_{11}O_2^-}{\text{mole } C_6H_{11}O_2^-}} = 0.890 \frac{\text{g } O_2}{\text{g } C_6H_{11}O_2^-} \quad (20)$$

Since 0.65 g of O_2 are required to convert 1 mole of hexane to 1 mole of hexanol (Equation 10), the total oxygen requirement to biodegrade hexane using the McCarty Method (Sawyer and McCarty, 1978) is 1.54 g of oxygen per g of hexane.

From Equation 19, 0.036 moles of carbon dioxide are produced for each 0.1 moles of oxygen consumed during the biodegradation of hexanol. Since hexane is converted to hexanol on a 1 mole per 1 mole basis (Equation 9), the ratio of oxygen consumed to carbon dioxide produced during the biodegradation of hexane is approximately 2.78 (Equation 21) using the McCarty Method (Sawyer and McCarty, 1978).

$$\frac{.1 \text{ moles } O_2}{.036 \text{ moles } CO_2} = \frac{2.78 \text{ moles } O_2}{\text{mole } CO_2} \quad (21)$$

Calculations Supporting
Air Flow Rates

Volume of Vents (not including gravel)

- Treatment Vent (per vent)

  L x W x H = V

  4.9 m x 2.4 m x 1.7 m = 20 m^3 (16 ft x 8 ft x 5.5 ft = 704 ft^3)

- Background Vent (per vent)

  2.4 m x 1.2 m x 1.1 m = 3.2 m^3 (8 ft x 4 ft x 3.5 ft = 112 ft^3)

Assuming an air filled void volume of 0.20. With a variable flow of 0.1 - 5 pore volumes/day then the range in rate of air movement is:

- Treatment Vent

  0.4 to 19.9 m^3/day (14 to 704 ft^3/day)

  0.275 to 14L/min (0.01 to 0.49 cfm)

- Background Vent

  .06 to 3.2 m^3/day (2.2 to 112 ft^3/day)

  0.044 to 2.2L/min (0.0016 to 0.078 cfm)

Calculations Supporting Water Flow Rates

Surface Area of Vents

- Treatment Vents

  L x W

  4.88 m x 2.44 m = 11.9 m^2 (16 ft x 8 ft = 128 ft^2)

- Background Vent

  2.44 m x 1.22 m = 3 m^2 (8 ft x 4 ft = 32 ft^2)

Assume a surface infiltration rate of 43 cm to 432 cm/year (17 to170 inches/yr)

= .12 cm/day to 1.12 cm/day (0.047 to 0.47 inches/day)

= .0012 m/day to .0112 m/day (0.0039 to 0.039 ft/day)

The flow rates may be calculated

- Treatment Vents

  11.9 m^2 x .0012 to .0112 m/day (128 ft^2 x 0.0039 to 0.039 ft/day)

= 0.014 to .14 m^3/day (0.50 - 5.0 ft^3/day)

= 14 to 140 L/day (3.7 - 37 gal/day)

= 10 to 100 mL/min (0.0026 - 0.026 gal/min)

- Background Vents

3 m^2 x .0012 to .0112 m/day (32 ft^2 x 0.0039 - 0.039 ft/day)

= .0036 to .036 m^3/day (0.12 - 1.2 ft^3/day)

= 3.6 to 36 L/day (0.94 - 9.4 gal/day)

= 2.5 to 25 mL/min (0.00065 - 0.0065 gal/min)

Calculations Supporting Nutrient Addition Rates

- Treatment Vents (per vent)

Volume = 20 m^3 (704 ft^3)

Assume ≈ 1600 kg/m^3 (100 lb/ft^3) density of soil

Mass of soil ~ 32,000 kg (70,400 lbs)

Assuming a contamination level of 20,000 mg/kg (2 lb/ft^3) of JP-4

Then the total JP-4 mass ~ 640 kg (1408 lbs)

Using nutrient ratio of C : N : P
100:10:1 (Alexander, 1977)

Then approximately 64 kg (141 lbs) N, and 6.4 (14 lbs) P are needed over a 7 month period for the test. (Note: From Table 5, values obtainable by maximizing equipment were 44.5 kg (98lbs) N and 4.3 (9.5 lbs) P, respectively.)

Nutrient delivery to treatment plots is summarized as follows:

- Treatment Vents (per vent)

64 kg (141 lbs) N = 245 kg (539 lbs) NH_4Cl/7 months

= 1.15 kg (2.57 lbs) NH_4Cl/day/treatment vent

6.4 kg (14 lbs) P = 21 kg (46 lbs) Trimetaphosphate (TMP)/7 months

= 100 g (0.22 lbs) TMP/day/treatment vent

- KNO_3 was added as a 0.18 g/L solution for additional nutrient needs.

$KN0_3$ = 0.18 g/L @ 20 mL/min = 5.18 g (0.011 lb) KNO_3/day

Mass Balance Approach for Determining rate constants (k) in Off-Gas Treatment Plot V3

Figure 83 illustrates the mass balance approach to calculating leakage and oxygen consumption rate (k %/min) in Off-Gas Treatment Plot V3.

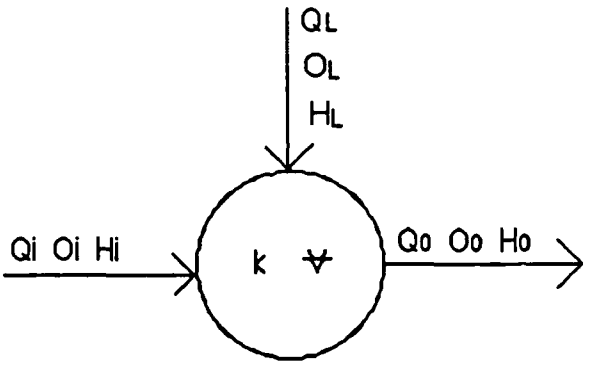

Figure 83. Mass balance schematic for Off-Gas Treatment Plot V3.

Q_i = Flow from V1 into V3, unknown, L/min

Q_L = Leakage flow, unknown, L/min

Q_o = Flow discharged V3, known, L/min

O_i = Oxygen inflow from V1 into V3 , known, %

O_L = Oxygen from leakage, known (%), assumed to equal V4 oxygen

O_o = Oxygen discharged from V3, known, %

H_i = Hydrocarbons inflow from V1 into V3 , known, % by volume

H_L = Hydrocarbons from leakage, assumed to be 0 % by volume

H_O = Hydrocarbons discharged from V3, known, % by volume

V = V3 soil volume, assumed to be:

$$2.44\ m \times 1.22\ m \times 1.07\ m \times .31 \times 1000\ L/m^3 = 983.27$$

K = Zero order oxygen decay constant, unknown, but may be estimated from shutdown data,%/min.

Mass balance equations:

$$Q_o O_o = Q_i O_i + Q_L O_L - (K V) \quad (22)$$

$$Q_o H_o = Q_i H_i - K V X \quad (23)$$

$$Q_o = Q_i + Q_L \quad (24)$$

Where X = ratio of hydrocarbon mineralized to oxygen removed = .1053

Allowing Qo = 1 and rewriting equation 22

$$O_o = a O_i + b O_L - K D \quad (25)$$

Where:
a = fraction of flow from V1
b = fraction of flow from outside leakage
D = Detention time

Rewriting Equation 23:

$$H_o = a\ Hi - K D (.1053) \quad (26)$$

Rewriting Equation 24:

$$1 = a + b \quad (27)$$

$$b = 1 - a \quad (28)$$

Substituting into Equation 25:

$$O_o = a\ O_i + (1-a)O_L - K D \quad (29)$$

Rewriting Equation 26:

$$k = \frac{a H_i - H_o}{D (.1053)} \quad (30)$$

Substituting into Equation 29:

$$O_o = a\,O_i + (1-a)O_L - \frac{(a\,H_i - H_o)\,D}{D(.1053)} \qquad (31)$$

$$O_o = a\,O_i + O_L - a\,O_L - a\,\frac{H_i - H_o}{(.1053)} \qquad (32)$$

$$O_o - O_L = a\,(O_i - O_L - \frac{H_i - H_o}{(.1053)}) \qquad (33)$$

$$a = \frac{Oo - O_L}{Oi + O_L - \frac{Hi - Ho}{(.1053)}} \qquad (34)$$

Rewriting Equation 30:

$$K = \frac{a\,Hi - Ho}{\frac{983L\,(.1053)}{\text{Flow Rate (L/min)}}} \qquad (35)$$

Appendix B

Field Data

ppm = µL/L

cc = mL

Table 15. Field data collected July 1989 through May 1990.

							CO2 DATA							O2 Data
					Sample			Dilution				Gastech	Calc.	Gastech
Date	Sample	Coordinate		Depth	(Lt)		Smpl Flow	(Rt.)		Dil. Flow		Reading	Conc.	Reading
Sampled	Location	x	Y	ft	Rotameter	G/S	cc/min	Rotameter	G/S	cc/min		C02 (%)	CO2 (%)	O2 (%)
7/14/89	Treatment Area	100	298	2	80	G	121.7	150	S	769.2		2.05	15	7
7/14/89	Treatment Area	106	298	2	80	G	121.7	150	S	769.2		2.6	19	2.6
7/15/89	Clean Area	200	300	2	OPEN			CLOSED				0.45	0.45	20.5
7/15/89	Clean Area	220	300	2	OPEN			CLOSED				0.4	0.4	20.9
7/15/89	Clean Area	220	280	2	OPEN			CLOSED				0.55	0.55	20.5
7/15/89	Clean Area	220	260	2	OPEN			CLOSED				0.18	0.18	20.9
7/15/89	Clean Area	200	260	2	OPEN			CLOSED				0.7	0.7	20.6
7/15/89	Clean Area	200	280	2	OPEN			CLOSED				0.5	0.5	20.9
	Positive Control													
7/15/89	Clean Area	210	270	2	OPEN			CLOSED				0.48	0.48	20.8
7/15/89	Clean Area	210	290	2	OPEN			CLOSED				0.45	0.45	20.9
	Positive Control													
7/15/89	Treatment Area	112	298	2	80	G	121.7	150	S	769.2		2.59	19	2.6
7/15/89	Treatment Area	118	298	2	80	G	121.7	150	S	769.2		2.55	18.7	2.8
7/15/89	Treatment Area	124	298	2	80	G	121.7	150	S	769.2		1.9	13.9	10
7/15/89	Treatment Area	126	298	2	80	G	121.7	150	S	769.2		2.6	19	6.5
7/15/89	Treatment Area	124	274	2	80	G	121.7	150	S	769.2		2.5	18.3	2.7
7/15/89	Treatment Area	118	274	1.5	OPEN			CLOSED				3.2	3.2	18
7/15/89	Treatment Area	112	274	2	80	G	121.7	150	S	769.2		1.15	8.4	7
7/15/89	Treatment Area	106	274	2	80	G	121.7	150	S	769.2		2.6	19	2.8
7/15/89	Treatment Area	100	274	1.5				CLOSED				2.8	2.8	18.3
7/15/89	Treatment Area	112	282	1.5	80	G	121.7	150	S	769.2		2.6	19	3.8
7/15/89	Treatment Area	112	282	2	80	G	121.7	150	S	769.2		2.55	18.7	3.2
7/15/89	Treatment Area	112	290	0.5	150	S	777	150	G	308.9		2.45	3.4	18.5
7/15/89	Treatment Area	112	290	1	80	G	121.7	150	S	769.2		2.2	16.1	10
7/15/89	Treatment Area	112	290	1.5	80	G	121.7	150	S	769.2		2.85	20.9	5.3
7/15/89	Treatment Area	112	290	2	80	G	121.7	150	S	769.2		2.75	20.1	4.3
7/15/89	Standard Check													
7/16/89	Standard Check											3.5	3.5	20.9
7/16/89	Treatment Area	124	290	2	80	G	121.7	150	S	769.2		2.4	17.6	2.5
7/16/89	Treatment Area	100	290	1.5	80	G	121.7	150	S	769.2		1.9	13.9	5.9
7/16/89	Treatment Area	100	282	1.5	150	S	777	110	G	202.7		2.8	3.5	16

							CO2 DATA						O2 Data
					Sample			Dilution			Gastech	Calc.	Gastech
Date	Sample	Coordinate		Depth	(Lt)		Smpl Flow	(Rt.)		Dil. Flow	Reading	Conc.	Reading
Sampled	Location	x	Y	ft	Rotameter	G/S	cc/min	Rotameter	G/S	cc/min	C02 (%)	CO2 (%)	O2 (%)
7/16/89	Surrounding Area	0	300	2	80	G	121.7	150	S	769.2	2.9	21.2	2.8
7/16/89	Surrounding Area	0	200	2	OPEN			CLOSED			3.8	3.8	17.9
7/16/89	Surrounding Area	100	200	2	OPEN			CLOSED			1.9	1.9	19
	Standard Check												
7/17/89	Treatment Area	100	182	1.5	80	S	349.6	80	S	337.1	2.95	5.8	14.2
7/17/89	V1-2A	104	286	1-1.5	80	G	121.7	150	S	769.2	1.6	11.7	3
7/17/89	V2-2A	120	286	1-1.5	OPEN			CLOSED			2	2	17.5
7/18/89	Standard Check										3.5		20.9
7/18/89	V1-3A	106	282	1-1.5	OPEN			CLOSED			2.8	2.8	11
7/18/89	V1-3A	106	282	1-1.5									
7/18/89	V1-2A	104	286	1-1.5	80	G	121.7	150	S	769.2	3.1	22.7	4.5
7/19/89	Standard Check										3.5		20.9
7/19/89	V1-2A	104	286	1-1.5	80	G	121.7	150	S	769.2	1.8	13.2	2.8
7/19/89	V1-1A	106	290	1-1.5	80	G	121.7	150	S	769.2	2.05	15	2.6
7/19/89	V2-1A	118	290	1-1.5	OPEN			CLOSED			3.6	3.6	15
7/19/89	Standard Check												
7/19/89	V2-2A	120	286	1-1.5	OPEN			CLOSED			2.95	2.95	17
7/19/89	V2-3A	118	282	1-1.5	OPEN			CLOSED			2.7	2.7	15

							Hydrocarbon Data					
					Sample			Dilution				
Date	Sample	Coordinate		Depth	(Lt)		Smpl Flow	(Rt.)		Dil. Flow	SIP Reading	Calc. Conc.
Sampled	Location	x	Y	ft	Rotameter	G/S	cc/min	Rotameter	G/S	cc/min	ppm	ppm
7/14/89	Treatment Area	100	298	2	40	G	48	150	S	769.2	840	14301
7/14/89	Treatment Area	106	298	2	20	G	17.4	150	S	769.2	600	27124
7/15/89	Clean Area	200	300	2	OPEN			CLOSED			<1	<1
7/15/89	Clean Area	220	300	2	OPEN			CLOSED			<1	<1
7/15/89	Clean Area	220	280	2	OPEN			CLOSED			<1	<1
7/15/89	Clean Area	220	260	2	OPEN			CLOSED			<1	<1
7/15/89	Clean Area	200	260	2	OPEN			CLOSED			<1	<1
7/15/89	Clean Area	200	280	2	OPEN			CLOSED			<1	<1
7/15/89	Positive Control				OPEN			CLOSED			13	13
7/15/89	Clean Area	210	270	2	OPEN			CLOSED			<1	<1
7/15/89	Clean Area	210	290	2	OPEN			CLOSED			<1	<1
7/15/89	Positive Control				OPEN			CLOSED			13	13
7/15/89	Treatment Area	112	298	2	20	G	17.4	150	S	769.2	460	20795
7/15/89	Treatment Area	118	298	2	20	G	17.4	150	S	769.2	600	27124
7/15/89	Treatment Area	124	298	2	20	G	17.4	150	S	769.2	370	16726
7/15/89	Treatment Area	126	298	2	20	G	17.4	150	S	769.2	185	8363
7/15/89	Treatment Area	124	274	2	20	G	17.4	150	S	769.2	350	15822
7/15/89	Treatment Area	118	274	1.5	OPEN			CLOSED			460	460
7/15/89	Treatment Area	112	274	2	20	G	17.4	150	S	769.2	390	17630
7/15/89	Treatment Area	106	274	2	20	G	17.4	150	S	769.2	340	15370
7/15/89	Treatment Area	100	274	1.5	OPEN			CLOSED			39	39
7/15/89	Treatment Area	112	282	1.5	20	G	17.4	150	S	769.2	310	14014
7/15/89	Treatment Area	112	282	2	20	G	17.4	150	S	769.2	460	20795
7/15/89	Treatment Area	112	290	0.5	150	S	777	150	G	311.4	730	1022
7/15/89	Treatment Area	112	290	1	50	G	53.6	150	S	769.2	506	7767
7/15/89	Treatment Area	112	290	1.5	20	G	17.4	150	S	769.2	430	19439
7/15/89	Treatment Area	112	290	2	10	G	8	150	S	769.2	410	39832
7/15/89	Standard Check										1000	
7/16/89	Standard Check										1000	
7/16/89	Treatment Area	124	290	2	20	G	17.4	150	S	769.2	530	23950
7/16/89	Treatment Area	100	290	1.5	80	G	121.7	150	S	769.2	510	3733
7/16/89	Treatment Area	100	282	1.5	20	G	17.4	150	S	769.2	285	12884

							Hydrocarbon Data					
					Sample			Dilution				
Date	Sample	Coordinate		Depth	(Lt)		Smpl Flow	(Rt.)		Dil. Flow	SIP Reading	Calc. Conc.
Sampled	Location	x	Y	ft	Rotameter	G/S	cc/min	Rotameter	G/S	cc/min	ppm	ppm
7/16/89	Surrounding Area	0	300	2	20	G	17.4	150	S	769.2	500	22603
7/16/89	Surrounding Area	0	200	2	OPEN			CLOSED			40	40
7/16/89	Surrounding Area	100	200	2	OPEN			CLOSED			13	13
7/16/89	Standard Check										1000	
7/17/89	Treatment Area	100	182	1.5							Flame quenched	
7/17/89	V1-2A	104	286	1-1.5	20	G	17.4	150	S	769.2	270	12206
7/17/89	V2-2A	120	286	1-1.5	50	G	53.6	150	S	769.2	445	6831
7/18/89	Standard Check										1000	
7/18/89	V1-3A	106	282	1-1.5	20	G	17.4	150	S	769.2	240	10850
7/18/89	V1-3A	106	282	1-1.5	60	G	80	150	S	769.2	870	9235
7/18/89	V1-2A	104	286	1-1.5	20	G	17.4	150	S	769.2	340	15370
7/19/89	Standard Check										1000	
7/19/89	V1-2A	104	286	1-1.5	20	G	17.4	150	S	769.2	500	22603
7/19/89	V1-1A	106	290	1-1.5	20	G	17.4	150	S	769.2	590	26672
7/19/89	V2-1A	118	290	1-1.5	60	G	80	150	S	769.2	540	5732
7/19/89	Standard Check										1010	
7/19/89	V2-2A	120	286	1-1.5	60	G	80	150	S	769.2	630	6687
7/19/89	V2-3A	118	282	1-1.5	60	G	80	150	S	769.2	405	4299

				CO2/THC DATA								O2 Data	
						Smpl			Dil.		Calc. Conc.	Gastech	
		Sample		Smpl (Lt)		Flow	Dil. (Rt.)		Flow	Gastech-CO2 (%)	CO2 (%)	Reading	02+C02
Date	Time	Loc.	Anal.	Rotameter	G/S	cc/min	Rotameter	G/S	cc/min	SIP-THC (ppm)	THC (ppm)	O2 (%)	(%)
29-Sep	AM	calib.	THC							GC Counts	Std. Conc.		
										605	2485.0		
										269	1491.0		
										160	1005.0		
										82	505.0		
										12	101.0		
29-Sep	9:52	V1-1A	O2	OPEN			CLOSED					1.5	
			CO2	50	S	169	150	S	769	2.6	14.4		15.9
			THC	40	G	46	150	S	769	1320	23387.0		
29-Sep	10:00	V1-1B	O2	OPEN			CLOSED						N/A
			CO2	70	G	100	150	S	769	1.6	13.9		
			THC	45	G	54	150	S	769	1670	25452.0		
29-Sep	10:05	V1-1C	O2	OPEN			CLOSED					2.5	
			CO2	50	S	169	150	S	769	2.5	13.9		16.4
			THC	40	G	46	150	S	769	1360	24095.7		
29-Sep	10:12	V1-2A	O2	OPEN			CLOSED					2.5	
			CO2	50	S	169	150	S	769	2.4	13.3		15.8
			THC	50	G	54	150	S	769	1500	22861.1		
29-Sep	10:18	V1-2B	O2	OPEN			CLOSED				Low air flow		
			CO2	50	S	169	150	S	769	1.8	10.0		N/A
			THC	70	G	100	150	S	769	1660	14425.4		
29-Sep	10:29	V1-2C	O2	OPEN			CLOSED					2.5	
			CO2	50	S	169	150	S	769	2.75	15.3		17.8
			THC	50	G	54	150	S	769	1980	30176.7		
29-Sep	10:35	V1-3A	O2	OPEN			CLOSED					3.5	
			CO2	50	S	169	150	S	769	2.4	13.3		16.8
			THC	50	S	169	150	S	769	1970	10934.1		
29-Sep	10:43	V1-3B	O2	OPEN			CLOSED				Low air flow		
			CO2	50	S	169	150	S	769	2.05	11.4		N/A
			THC	74	G	108	150	S	769	1600	12992.6		

						CO2/THC DATA							O2 Data	
						Smpl			Dil.		Calc. Conc.	Gastech	
		Sample		Smpl (Lt)		Flow	Dil. (Rt.)		Flow	Gastech-CO2 (%)	CO2 (%)	Reading	02+C02
Date	Time	Loc.	Anal.	Rotameter	G/S	cc/min	Rotameter	G/S	cc/min	SIP-THC (ppm)	THC (ppm)	O2 (%)	(%)
29-Sep	10:53	V1-3C	O2	OPEN			CLOSED					2.5	
			CO2	50	S	169	150	S	769	2.8	15.5		18.0
			THC	50	G	62	150	S	769	1527	20466.7		
29-Sep	AM	V2-1A	O2	OPEN			CLOSED					14.2	
			CO2	OPEN			CLOSED			3.7	3.4		17.6
			THC	OPEN			CLOSED			2400	2400.0		
29-Sep	AM	V2-1B	O2	OPEN			CLOSED					1.5	
			CO2	50	S	169	150	S	769	2.7	15.0		16.5
			THC	40	G	46	150	S	769	1705	30208.2		
29-Sep	AM	V2-1C	O2	OPEN			CLOSED					1.5	
			CO2	50	S	169	150	S	769	2.7	15.0		16.5
			THC	35	G	39	150	S	769	1730	35842.1		
29-Sep	PM	V2-2A	O2	OPEN			CLOSED					16	
			CO2	OPEN			CLOSED			1.8	1.8		17.8
			THC	OPEN			CLOSED			280	280.0		
29-Sep	12:20	V2-2B	O2	OPEN			CLOSED					2	
			CO2	50	S	169	150	S	769	2.75	15.3		17.3
			THC	50	G	54	150	S	769	1580	24080.4		
29-Sep	12:30	V2-2C	O2	OPEN			CLOSED					1.5	
			CO2	50	S	169	150	S	769	2.7	15.0		16.5
			THC	35	G	39	150	S	769	1505	31180.5		
29-Sep	12:40	V2-3A	O2	OPEN			CLOSED					12.8	
			CO2	OPEN			CLOSED			3.2	3.2		16.0
			THC	150	S	777	150	G	309	1930	2697.5		
29-Sep	12:53	V2-3B	O2	OPEN			CLOSED					19.5	
			CO2	OPEN			CLOSED			0.5	.5		20.0
			THC	OPEN			CLOSED			700	700.0		
29-Sep	13:03	V2-3C	O2	OPEN			CLOSED					1.5	
			CO2	50	S	169	150	S	769	2.65	14.7		16.2
			THC	40	G	46	150	S	769	1460	25867.4		

					CO2/THC DATA								O2 Data	
						Smpl			Dil.		Calc. Conc.	Gastech	
		Sample		Smpl (Lt)		Flow	Dil. (Rt.)		Flow	Gastech-CO2 (%)	CO2 (%)	Reading	02+C02
Date	Time	Loc.	Anal.	Rotameter	G/S	cc/min	Rotameter	G/S	cc/min	SIP-THC (ppm)	THC (ppm)	O2 (%)	(%)
29-Sep	PM	V1-3B	O2	OPEN			CLOSED					2	
			CO2	50	S	169	150	S	769	2.8	15.5		17.5
			THC	40	G	46	150	S	769	1070	18957.6		
29-Sep	PM	V1-2B	O2	OPEN			CLOSED					1.9	
			CO2	50	S	169	150	S	769	2.7	15.0		16.9
			THC	40	G	46	150	S	769	1140	20197.8		
29-Sep	PM	V1-1B	O2	OPEN			CLOSED						
			CO2										
			THC	40	G	46	150	S	769	1240	21969.6		
2-Oct	8:30	Zeroed and spanned instrument using 3.5% CO2 in N2											
2-Oct	8:48	V1-1A	O2	OPEN			CLOSED					1.8	
			CO2	50	S	169	150	S	769	2.5	13.9		15.7
2-Oct	8:54	V1-1B	O2	OPEN			CLOSED					0.8	
			CO2	50	S	169	150	S	769	2.5	13.9		14.7
2-Oct	9:00	V1-1C	O2	OPEN			CLOSED					1.5	
			CO2	50	S	169	150	S	769	2.5	13.9		15.4
2-Oct	9:08	V1-2A	O2	OPEN			CLOSED					1	
			CO2	50	S	169	150	S	769	2.5	13.9		14.9
2-Oct	9:13	V1-2B	O2	OPEN			CLOSED					3.5	
			CO2	50	S	169	150	S	769	2.8	15.5		19.0
2-Oct	9:19	V1-2C	O2	OPEN			CLOSED					2.5	
			CO2	50	S	169	150	S	769	2.41	13.4		15.9
2-Oct	9:22	V1-3A	O2	OPEN			CLOSED					2	
			CO2	50	S	169	150	S	769	2.4	13.3		15.3
2-Oct	9:28	V1-3B	O2	OPEN			CLOSED					0	
			CO2	50	S	169	150	S	769	2.75	15.3		15.3
2-Oct	9:32	V1-3C	O2	OPEN			CLOSED					0.2	
			CO2	50	S	169	150	S	769	2.82	15.7		15.9
	9:50	Standard check with Atmosperic air								0.1		20.2	
	9:50	Standard check with 3.5% CO2/N2								3.7		-0.5	
	13:46	Standard check with 5.1% CO2/N2								5.1		0	

					CO2/THC DATA								O2 Data	
		Sample		Smpl (Lt)		Smpl Flow	Dil. (Rt.)		Dil. Flow	Gastech-CO2 (%)	Calc. Conc. CO2 (%)	Gastech Reading	02+C02
Date	Time	Loc.	Anal.	Rotameter	G/S	cc/min	Rotameter	G/S	cc/min	SIP-THC (ppm)	THC (ppm)	O2 (%)	(%)
2-Oct	13:51	V2-1A	O2	OPEN			CLOSED					15.7	
			CO2	OPEN			CLOSED			2.75	2.8		
2-Oct	14:00	V2-1B	O2	OPEN			CLOSED					.5	
			CO2	50	S	169	150	S	769	2.5	13.9		14.4
2-Oct	14:04	V2-1C	O2	OPEN			CLOSED					.4	
			CO2	50	S	169	150	S	769	2.6	14.4		14.8
2-Oct	14:09	V2-2A	O2	OPEN			CLOSED					14.0	
			CO2	OPEN			CLOSED			3.3	3.3		17.3
2-Oct	14:21	V2-2B	O2	OPEN			CLOSED					1.5	
			CO2	50	S	169	150	S	769	2.45	13.6		15.1
2-Oct	14:18	V2-2C	O2	OPEN			CLOSED					.5	
			CO2	50	S	169	150	S	769	2.55	14.2		14.7
2-Oct	14:30	V2-3A	O2	OPEN			CLOSED					5.4	
			CO2	50	S	169	150	S	769	1.8	10.0		15.4
2-Oct	14:40	V2-3B	O2	OPEN			CLOSED					.5	
			CO2	50	S	169	150	S	769	2.65	14.7		15.2
2-Oct	14:37	V2-3C	O2	OPEN			CLOSED					.5	
			CO2	50	S	169	150	S	769	2.65	14.7		15.2
		Standard check with 101 ppm hexane - GC Counts =11											
2-Oct	15:36	V3A	O2	OPEN			CLOSED					16.2	
			CO2	OPEN			CLOSED			3.2	3.2		19.4
			THC	OPEN			CLOSED			24	24.0		
2-Oct	15:40	V3B	O2	OPEN			CLOSED					16.5	
			CO2	OPEN			CLOSED			2.9	2.9		19.4
			THC	OPEN			CLOSED			18	18.0		
2-Oct	15:45	V3C	O2	OPEN			CLOSED					16.2	
			CO2	OPEN			CLOSED			3.2	3.2		19.4
			THC	OPEN			CLOSED			16	16.0		
2-Oct	15:58	V4A	O2	OPEN			CLOSED					17.5	
			CO2	OPEN			CLOSED			2.75	2.8		20.3
			THC	OPEN			CLOSED			12	12.0		

				CO2/THC DATA								O2 Data	
						Smpl			Dil.		Calc. Conc.	Gastech	
		Samp e		Smpl (Lt)		Flow	Dil. (Rt.)		Flow	Gastech-CO2 (%)	CO2 (%)	Reading	02+C02
Date	Time	Loc.	Anal.	Rotameter	G/S	cc/min	Rotameter	G/S	cc/min	SIP-THC (ppm)	THC (ppm)	O2 (%)	(%)
2-Oct	16:00	V4B	O2	OPEN			CLOSED					18	
			CO2	OPEN			CLOSED			2.35	2.4		20.4
			THC	OPEN			CLOSED			12	12.0		
2-Oct	16:05	V4C	O2	OPEN			CLOSED					17.6	
			CO2	OPEN			CLOSED			2.6	2.6		20.2
			THC	OPEN			CLOSED			12	12.0		
		Standard check with atmospheric air									.1	20.8	
		Standard check with 5.1% CO2/N2									5.1	0	
		Standard check - GC reading 113 ppm on 101ppm std.											
		Recalibrated GC using 1491 ppm std- GC counts = 267											
2-Oct	16:30	V1 disch	O2	OPEN			CLOSED					19.2	
			CO2	OPEN			CLOSED			0.8	.8		
			THC	OPEN			CLOSED			590	590.0		
2-Oct	16:44	V2 disch	O2	OPEN			CLOSED					14.2	
			CO2	OPEN			CLOSED			4.2	4.2		
			THC	50	S	169	150	S	769	390	2164.6		
2-Oct	17:10	Standard check with 1491 std								1556	1556.0		
		Standard check with atmospheric air								0.1	.1	20.9	
		Standard check with 5.1% CO2/N2								5.1	5.1	0	
3-Oct	8:30	Standard check with 1491 std								1491	1491.0		
		Standard check with atmospheric air								0.03	.0	20.9	
		Standard check with 5.1% CO2/N2								5.1	5.1	0	
		Note: Rotameter readings apply to CO2 and THC measurements only. O2 measurements are read directly.											
3-Oct	12:00	V1-1A	CO2/02	50	S	169	150	S	769	2.4	13.3	3.2	16.5
3-Oct	12:00	VI-1B	CO2/02	50	S	169	150	S	769	2.6	14.4	1.8	16.2
3-Oct	12:00	VI-1C	CO2/02	50	S	169	150	S	769	2.3	12.8	4	16.8
3-Oct	12:00	V1-2A	CO2/02	50	S	169	150	S	769	2.4	13.3	2.3	15.6
3-Oct	12:00	V1-2B	CO2/02	50	S	169	150	S	769	2.75	15.3	0.6	15.9
3-Oct	12:00	V1-2C	CO2/02	50	S	169	150	S	769	2.82	15.7	1	16.7
3-Oct	12:00	VI disch	CO2/02	OPEN			CLOSED			1	1.0	19.2	20.2

					CO2/THC DATA									
						Smpl			Dil.			Calc. Conc.	O2 Data Gastech	
		Sample		Smpl (Lt)		Flow	Dil. (Rt.)		Flow	Gastech-CO2 (%)		CO2 (%)	Reading	02+C02
Date	Time	Loc.	Anal.	Rotameter	G/S	cc/min	Rotameter	G/S	cc/min	SIP-THC (ppm)		THC (ppm)	O2 (%)	(%)
3-Oct	12:00	V2 disch	CO2/02	OPEN			CLOSED			4.3		4.3	14.6	18.9
3-Oct	12:00	V2-1A	CO2/02	OPEN			CLOSED			2.4		2.4	16.5	18.9
3-Oct	12:00	V2-1B	CO2/02	50	S	169	150	S	769	2.7		15.0	0.5	15.5
3-Oct	12:00	V2-1C	CO2/02	50	S	169	150	S	769	2.8		15.5	0.4	15.9
3-Oct	12:00	V2-2A	CO2/02	50	S	169	150	S	769	0.75		4.2	16	20.2
3-Oct	12:00	V2-2B	CO2/02	50	S	169	150	S	769	2.7		15.0	1.2	16.2
3-Oct	12:00	V2-2C	CO2/02	50	S	169	150	S	769	2.8		15.5	0.3	15.8
3-Oct	12:00	V2-3A	CO2/02	OPEN			CLOSED			3.4		3.4	15.5	18.9
3-Oct	12:00	V2-3B	CO2/02	50	S	169	150	S	769	2.4		13.3	4.2	17.5
3-Oct	12:00	V2-3C	CO2/02	50	S	169	150	S	769	2.85		15.8	0.5	16.3
3-Oct	12:00	Standard check with atmospheric air								0.15		.2	20.3	20.5
	12:00	Standard check with 5.1% CO2/N2								5.1		5.1	0	
	12:00	Standard check with 1491 ppm std.								1470-1495		1470-1495		
3-Oct	12:00	V3 disch	CO2/O2	OPEN			CLOSED			1.6		1.6	17.8	19.4
			THC	OPEN			CLOSED			39		39.0		
3-Oct	12:00	V3 inlet	CO2/O2	OPEN			CLOSED			1.9		1.9	17.6	19.5
			THC	OPEN			CLOSED			1650		1650.0		
3-Oct	12:00	V3A	CO2/O2	OPEN			CLOSED			1.8		1.8	18.5	20.3
			THC	OPEN			CLOSED			120		120.0		
3-Oct	12:00	V3B	CO2/O2	OPEN			CLOSED			1.45		1.5	18.9	20.4
			THC	OPEN			CLOSED			216		216.0		
3-Oct	12:00	V3C	CO2/O2	OPEN			CLOSED			1.8		1.8	18.8	20.6
			THC	OPEN			CLOSED			162		162.0		
3-Oct	12:00	V4 disch	CO2/O2	OPEN			CLOSED			2.35		2.4	18	20.4
			THC	OPEN			CLOSED			20		20.0		
3-Oct	12:00	V4A	CO2/O2	OPEN			CLOSED			2.4		2.4	18.2	20.6
			THC	OPEN			CLOSED			10		10.0		
3-Oct	12:00	V4B	CO2/O2	OPEN			CLOSED			2.05		2.1	18.5	20.6
			THC	OPEN			CLOSED			9.4		9.4		
3-Oct	12:00	V4C	CO2/O2	OPEN			CLOSED			3.1		3.1	15	18.1
			THC	OPEN			CLOSED			15		15.0		

				CO2/THC DATA								O2 Data	
						Smpl			Dil.		Calc. Conc.	Gastech	
		Sample		Smpl (Lt)		Flow	Dil. (Rt.)		Flow	Gastech-CO2 (%)	CO2 (%)	Reading	02+C02
Date	Time	Loc.	Anal.	Rotameter	G/S	cc/min	Rotameter	G/S	cc/min	SIP-THC (ppm)	THC (ppm)	O2 (%)	(%)
		Standard check with atmospheric air								0.03	.0	20.8	
		Standard check with 5.1% CO2/N2								4.9	4.9	0	
3-Oct	12:00	V2 disch	CO2/O2	120	S	582	120	S	569	2.82	5.6	13	18.6
			THC	80	S	350	120	S	569	1410	3702.3		
3-Oct	12:00	V1 disch	CO2/O2	OPEN			CLOSED			3.22	3.2	15.6	18.8
			THC	100	S	458	100	S	445	1270	1270.0		
		Standard check with 1491 ppm std.								1480-1510	1480-1510		
3-Oct	12:00	V1 disch	CO2/O2	OPEN			CLOSED			4.55	4.6	13	17.6
			THC	100	S	458	100	S	445	1670	3292.6		
3-Oct	12:00	V2 disch	CO2/O2	OPEN			CLOSED			5.1	5.1	13	18.1
			THC	80	S	350	150	S	769	1200	3836.6		
3-Oct	12:00	V2-1A	CO2/O2	OPEN			CLOSED			2.4	2.4	16.5	18.9
			THC	OPEN			CLOSED			1760	1760.0		
3-Oct	12:00	V2-1B	CO2/O2	50	S	169	150	S	769	2.6	14.4	0.5	14.9
			THC	40	G	46	150	S	769	1600	28347.8		
3-Oct	12:00	V2-1C	CO2/O2	50	S	169	150	S	769	2.7	15.0	0.5	15.5
			THC	30	G	31	150	S	769	1260	32516.1		
3-Oct	12:00	V2-2A	CO2/O2	OPEN			CLOSED			2.45	2.5	17.4	19.9
			THC	OPEN			CLOSED			94	94.0		
3-Oct	12:00	V2-2B	CO2/O2	50	S	169	150	S	769	2.6	14.4	1.2	15.6
			THC	40	G	46	150	S	769	1001	17735.1		
3-Oct	12:00	V2-3A	CO2/O2	OPEN			CLOSED			2.6	2.6	17	19.6
			THC	OPEN			CLOSED			440	440.0		
3-Oct	12:00	V2-3B	CO2/O2	50	S	169	150	S	769	1.95	10.8	5.8	16.6
			THC	50	G	54	150	S	769	1405	21413.2		
3-Oct	12:00	V2-3C	CO2/O2	50	S	169	150	S	769	2.6	14.4	0.8	15.2
			THC	40	G	46	150	S	769	1666	29517.2		
3-Oct	12:00	V1-1A	CO2/O2	50	S	169	150	S	769	2.4	13.3	1.8	15.1
			THC	40	G	46	150	S	769	1400	24804.3		
3-Oct	12:00	V1-1B	CO2/O2	50	S	169	150	S	769	2.55	14.2	1.8	16.0
			THC	40	G	46	150	S	769	1777	31483.8		

					CO2/THC DATA							O2 Data	
						Smpl			Dil.		Calc. Conc.	Gastech	
		Sample		Smpl (Lt)		Flow	Dil. (Rt.)		Flow	Gastech-CO2 (%)	CO2 (%)	Reading	02+C02
Date	Time	Loc.	Anal.	Rotameter	G/S	cc/min	Rotameter	G/S	cc/min	SIP-THC (ppm)	THC (ppm)	O2 (%)	(%)
3-Oct	12:00	V1-1C	CO2/O2	50	S	169	150	S	769	2.4	13.3	3	16.3
			THC	40	G	46	150	S	769	1811	32086.2		
3-Oct	12:00	V1-2A	CO2/O2	50	S	169	150	S	769	2.5	13.9	1	14.9
			THC	40	G	46	150	S	769	1060	18780.4		
3-Oct	12:00	V1-2B	CO2/O2	50	S	169	150	S	769	2.7	15.0	1.5	16.5
			THC	40	G	46	150	S	769	1120	19843.5		
3-Oct	12:00	V1-2C	CO2/O2	50	S	169	150	S	769	2.6	14.4	2.6	17.0
			THC	40	G	46	150	S	769	1260	22323.9		
3-Oct	12:00	V1-3A	CO2/O2	OPEN			CLOSED			4.8	4.8	10.5	15.3
			THC	100	S	458	100	S	769	1630	4366.8		
3-Oct	12:00	V1-3B	CO2/O2	50	S	169	150	S	769	2.5	13.9	2.5	16.4
			THC	40	G	46	150	S	769	960	17008.7		
3-Oct	12:00	V1-3C	CO2/O2	50	S	169	150	S	769	2.75	15.3	1.5	16.8
			THC	40	G	46	150	S	769	930	16477.2		
3-Oct	12:00	V1 disch	CO2/O2	OPEN			CLOSED			5	5.0	12	17.0
			THC	80	S	350	150	S	769	1310	4188.3		
3-Oct	12:00	V2 disch	CO2/O2	OPEN			CLOSED			5.1	5.1	13	18.1
			THC	80	S	350	150	S	769	1230	3932.5		
		Standard check with atmospheric air								0.04	.0	20.8	
		Standard check with 5.1% CO2/N2								4.9	4.9	0	
		Standard check with 1491 ppm std.								1489-1511	1489-1511		
4-Oct	12:00	Standard check with atmospheric air								0.03	.0	20.9	
		Standard check with 5.1% CO2/N2								5.1	5.1	0	
		Standard check with 1491 ppm std. GC counts = 258											
4-Oct	12:00	V1 disch	CO2/O2	OPEN			CLOSED			4.2	4.2	14	18.2
			THC	150	G	311	150	G	309	1770	3528.6		
4-Oct	12:00	V2 disch	CO2/O2	OPEN			CLOSED			3.9	3.9	15.5	19.4
			THC	150	G	311	150	G	309	1510	3010.3		
4-Oct	12:00	V1-1A	O2									1.8	
4-Oct	12:00	VI-1B	O2									1.5	
4-Oct	12:00	VI-1C	O2									1.3	
4-Oct	12:00	V1-2A	O2									2.5	

				CO2/THC DATA								O2 Data	
						Smpl			Dil.		Calc. Conc.	Gastech	
		Sample		Smpl (Lt)		Flow	Dil. (Rt.)		Flow	Gastech-CO2 (%)	CO2 (%)	Reading	02+C02
Date	Time	Loc.	Anal.	Rotameter	G/S	cc/min	Rotameter	G/S	cc/min	SIP-THC (ppm)	THC (ppm)	O2 (%)	(%)
4-Oct	12:00	V1-2B	O2									1.8	
4-Oct	12:00	V1-2C	O2									2	
4-Oct	12:00	V1-3C	O2									11.5	
4-Oct	12:00	V1-3C	O2									2.1	
4-Oct	12:00	V1-3C	O2									2.2	
4-Oct	12:00	V2-1A	O2									16.9	
4-Oct	12:00	V2-1B	O2									1.3	
4-Oct	12:00	V2-1C	O2									1	
4-Oct	12:00	V2-2A	O2									17.5	
4-Oct	12:00	V2-2B	O2									2.8	
4-Oct	12:00	V2-2C	O2									1	
4-Oct	12:00	V2-3A	O2									17	
4-Oct	12:00	V2-3B	O2									6.2	
4-Oct	12:00	V2-3C	O2									1	
4-Oct	12:00	V12 disch	CO2/O2	100	G	168	150	S	769	2.9	16.2	1.9	18.1
			THC	40	G	46	150	S	769	1100	19489.1		
4-Oct	12:00	V22 disch	CO2/O2	100	G	168	150	S	769	2.9	16.2	6	22.2
			THC	40	G	46	150	S	769	362	6413.7		
4-Oct	12:00	V12 disch	CO2/O2	150	G	311	150	S	769	4.35	15.1	0.8	15.9
			THC	40	G	46	150	S	769	1230	21792.4		
4-Oct	12:00	Dewater	CO2/O2	OPEN			CLOSED			1	1.0	18.5	19.5
			THC	100	G	168	150	S	769	600	3346.4		
4-Oct	12:00	V3 inlet	CO2/O2	100	G	168	150	S	769	2.85	15.9	1.8	17.7
			THC	40	G	46	150	S	769	760	13465.2		
4-Oct	12:00	V3 inlet	CO2/O2	100	G	168	150	S	769	2.1	11.7	7.5	19.2
			THC	40	G	46	150	S	769	600	10630.4		
4-Oct	12:00	V3 outle	CO2/O2	OPEN			CLOSED			1.85	1.9	17.5	19.4
			THC	OPEN			CLOSED			88	88.0		
4-Oct	12:00	V4 outle	CO2/O2	OPEN			CLOSED			2.6	2.6	17.5	20.1
			THC	OPEN			CLOSED			44	44.0		
		Standard check with atmospheric air								0.25	.3	20.2	
		Standard check with 5.1% CO2/N2								5.2	5.2	0	

					CO2/THC DATA							O2 Data	
						Smpl			Dil.		Calc. Conc.	Gastech	
		Sample		Smpl (Lt)		Flow	Dil. (Rt.)		Flow	Gastech-CO2 (%)	CO2 (%)	Reading	02+C02
Date	Time	Loc.	Anal.	Rotameter	G/S	cc/min	Rotameter	G/S	cc/min	SIP-THC (ppm)	THC (ppm)	O2 (%)	(%)
5-Oct	12:00	Standard check with atmospheric air								0.03	.0	20.9	
		Standard check with 5.1% CO2/N2								5.1	5.1		
		Standard check with 1491 ppm std.								1495	1495.0		
5-Oct	12:00	V1-1A	CO2/O2									6.3	
5-Oct	12:00	VI-1B	CO2/O2	100	G	168	150	S	769	1.75	9.8	8.5	18.3
5-Oct	12:00	VI-1C	CO2/O2									8.5	
5-Oct	12:00	V1-2A	CO2/O2									12	
5-Oct	12:00	V1-2B	CO2/O2									9.5	
5-Oct	12:00	V1-2C	CO2/O2									4.3	
5-Oct	12:00	V1-3A	CO2/O2									16.2	
5-Oct	12:00	V1-3B	CO2/O2									16	
5-Oct	12:00	V1-3C	CO2/O2									14.2	
5-Oct	12:00	V1 disch	CO2/O2	150	G	311	100	S	445	2.85	6.9	11	17.9
			THC	40	G	46	150	S	769	1300	23032.6		
5-Oct	12:00	V2-1A	CO2/O2									20.5	
5-Oct	12:00	V2-1B	CO2/O2									1	
5-Oct	12:00	V2-1C	CO2/O2	No air flow									
5-Oct	12:00	V2-2A	CO2/O2									20.8	
5-Oct	12:00	V2-2B	CO2/O2									2	
5-Oct	12:00	V2-2C	CO2/O2	sucked water									
5-Oct	12:00	V2-3A	CO2/O2									19	
5-Oct	12:00	V2-3B	CO2/O2									7.5	
5-Oct	12:00	V2-3C	CO2/O2									2	
5-Oct	12:00	V2-2 disc	CO2/O2	50	S	169	150	S	769	1.6	8.9	11	19.9
			THC	40	G rt	49	150	S lt	788	560	9565.7		
	12:00	Standard check with atmospheric air								0.03	.0	20.9	
		Standard check with 5.1% CO2/N2								5.1	5.1	0	
		Standard check with 1491 ppm std. GC counts = 249								1491	1491.0		
5-Oct	12:00	V2-1A	CO2/O2	OPEN			CLOSED			0.45	.5	20	20.5
			THC	OPEN			CLOSED			30	30.0		
5-Oct	12:00	V2-1B	CO2/O2	100	G	168	150	S	769	2.1	11.7	0.5	12.2
			THC	40	G	46	150	S	769	1425	25247.3		

				CO2/THC DATA								O2 Data	
						Smpl			Dil.		Calc. Conc.	Gastech	
		Sample		Smpl (Lt)		Flow	Dil. (Rt.)		Flow	Gastech-CO2 (%)	CO2 (%)	Reading	02+C02
Date	Time	Loc.	Anal.	Rotameter	G/S	cc/min	Rotameter	G/S	cc/min	SIP-THC (ppm)	THC (ppm)	O2 (%)	(%)
5-Oct	12.00	V2-1C	CO2/O2	No air flow									
			THC										
5-Oct	12:00	V2-2A	CO2/O2	OPEN			CLOSED			0.2	.2	20.5	20.7
			THC	OPEN			CLOSED			29	29.0		
5-Oct	12:00	V2-2B	CO2/O2	100	G	168	150	S	769	2.65	14.8	1.5	16.3
			THC	40	G	46	150	S	769	920	16300 0		
5-Oct	12:00	V2-2C	CO2/O2	No air flow									
			THC										
5-Oct	12:00	V2-3A	CO2/O2	OPEN			CLOSED			1.65	1.7	17.6	19.3
			THC	OPEN			CLOSED			430	430.0		
5-Oct	12:00	V2-3B	CO2/O2	150	G	311	150	G	309	3.6	7.2	8	15.2
			THC	50	G	54	150	S	769	1110	16917.2		
5-Oct	12:00	V2-3C	CO2/O2	100	G	168	150	S	769	2.35	13.1	3.5	16.6
			THC	40	G	46	150	S	769	1100	19489.1		
5-Oct	12:00	V22 disch	CO2/O2	150	G	311	150	G	309	3.1	6.2	10	16.2
			THC	80	G	122	150	S	769	1250	9129.1		
		Standard check with atmospheric air								0.05	.1	20.5	20.6
		Standard check with 5.1% CO2/N2											
		Standard check with 1491 ppm std. GC counts = 254								1510	1510.0		
5-Oct	12:00	V1-1A	CO2/O2	150	G	311	150	G	309	3.85	7.7	8	15.7
			THC	50	G	54	150	S	769	1290	19660.6		
5-Oct	12:00	V1-1B	CO2/O2	150	G	311	150	G	309	3.25	6.5	10.2	16.7
			THC	30	G	31	150	G	769	1080	27871.0		
5-Oct	12:00	V1-1C	CO2/O2	150	G	311	150	G	309	3.4	6.8	10	16.8
			THC	30	G	31	150	S	769	1200	30967.7		
5-Oct	12:00	V1-2A	CO2/O2	150	G	311	150	G	309	2.5	5.0	12	17.0
			THC	40	G	46	150	S	769	960	17008.7		
5-Oct	12:00	V1-2B	CO2/O2	150	G	311	150	G	309	3.6	7.2	9.8	17.0
			THC	50	G	54	150	S	769	1400	21337.0		
5-Oct	12:00	V1-2C	CO2/O2	100	G	168	150	S	769	2.15	12.0	6.5	18.5
			THC	40	G	46	150	S	769	1420	25158.7		

					CO2/THC DATA							O2 Data	
						Smpl			Dil.		Calc. Conc.	Gastech	
		Sample		Smpl (Lt)		Flow	Dil. (Rt.)		Flow	Gastech-CO2 (%)	CO2 (%)	Reading	02+C02
Date	Time	Loc.	Anal.	Rotameter	G/S	cc/min	Rotameter	G/S	cc/min	SIP-THC (ppm)	THC (ppm)	O2 (%)	(%)
5-Oct	12:00	V1-3A	CO2/O2	OPEN			CLOSED			3.5	3.5	17.2	20.7
			THC	150	G	311	150	G	309	1174	2340.5		
5-Oct	12:00	V1-3B	CO2/O2	OPEN			CLOSED			3.6	3.6	15.8	19.4
			THC	40	G	46	150	S	769	970	17185.9		
5-Oct	12:00	V1-3C	CO2/O2	OPEN			CLOSED			4.25	4.3	15	19.3
			THC	50	G	54	150	S	769	1190	18136.5		
5-Oct	12:00	V12 disch	CO2/O2	150	G	311	150	G	309	3.05	6.1	11.1	17.2
			THC	40	G	46	150	S	769	1100	19489.1		
5-Oct	12:00	V22 disch	CO2/O2	150	G	311	150	G	309	3	6.0	12	18.0
			THC	80	G	122	150	S	769	1765	12890.3		
	12:00	Standard check with atmospheric air								0.03	.0	21.1	
		Standard check with 5.1% CO2/N2								5.1	5.1	0	
		Standard check with 1491 ppm std.								1494	1494.0		
6-Oct	12:00	Standard check with atmospheric air								0.03	.0	20.9	
		Standard check with 5.1% CO2/N2								5.1	5.1	0	
6-Oct	12:00	V3A	O2									14.8	
6-Oct	12:00	V3B	O2									14	
6-Oct	12:00	V3C	O2									13.6	
6-Oct	12:00	V3 inlet	O2									16	
6-Oct	12:00	V3 disch	O2									14.4	
6-Oct	12:00	V4A	O2									19	
6-Oct	12:00	V4B	O2									19	
6-Oct	12:00	V4C	O2									18.8	
6-Oct	12:00	V4 inlet	O2									20.9	
6-Oct	12:00	V4 disch	O2									18.2	
6-Oct	12:00	V1 disch	O2									12	
6-Oct	12:00	V2 disch	O2									10	
6-Oct	12:00	V2-1A	O2									20.2	
6-Oct	12:00	V2-1B	O2									3	
6-Oct	12:00	V2-1C	O2	No air flow									
6-Oct	12:00	V2-2A	O2									18.5	
6-Oct	12:00	V2-2B	O2									3.5	

				CO2/THC DATA								O2 Data	
						Smpl			Dil.		Calc. Conc.	Gastech	
		Sample		Smpl (Lt)		Flow	Dil. (Rt.)		Flow	Gastech-CO2 (%)	CO2 (%)	Reading	02+C02
Date	Time	Loc.	Anal.	Rotameter	G/S	cc/min	Rotameter	G/S	cc/min	SIP-THC (ppm)	THC (ppm)	O2 (%)	(%)
6-Oct	12:00	V2-2C	O2									0.4	
6-Oct	12:00	V2-3A	O2									19.5	
6-Oct	12:00	V2-3B	O2									12.2	
6-Oct	12:00	V2-3C	O2									8.8	
6-Oct	12:00	V1-1A	O2									8.5	
6-Oct	12:00	VI-1B	O2									11	
6-Oct	12:00	VI-1C	O2									11.5	
6-Oct	12:00	V1-2A	O2									13.5	
6-Oct	12:00	V1-2B	O2									10.6	
6-Oct	12:00	V1-2C	O2									6	
6-Oct	12:00	V1-3A	O2									17	
6-Oct	12:00	V1-3A	O2									16	
6-Oct	12:00	V1-3C	O2									14.2	
6-Oct	12:00	Standard check with atmospheric air										20.9	
6-Oct	12:00	Standard check with 5.1% CO2/N2										0.1	
10-Oct	12:00	Standard check with atmospheric air										21	
10-Oct		Standard check with 5.1% CO2/N2								5.1	5.1	0	
10-Oct	14:00	V1 disch	CO2/O2	150	G	311	150	S	769	4	13.9	4.2	18.1
			THC	50	G	54	150	S	769	1830	27890.6		
10-Oct	14:00	V2 disch	CO2/O2	150	G	311	150	S	769	3	10.4	6.5	16.9
			THC	50	G	54	150	S	769	1550	23623.1		
10-Oct	14:00	V3 disch	CO2/O2	OPEN			CLOSED			3.2	3.2	16.2	19.4
			THC	OPEN			CLOSED			1900	1900.0		
10-Oct	14:00	V3 inlet	CO2/O2	OPEN			CLOSED			3.6	3.6	15.5	19.1
			THC	100	G	168	150	S	769	1280	7139.0		
10-Oct	14:00	V4 disch	CO2/O2	OPEN			CLOSED			2	2.0	18.5	20.5
			THC	OPEN			CLOSED			380	380.0		
	Note: Values for V3 and V4 are likely too high due to contamination of the sampling train.												

					CO2/THC DATA								O2 Data	
						Smpl			Dil.		Calc. Conc.	Gastech		
		Sample		Smpl (Lt)		Flow	Dil. (Rt.)		Flow	Gastech-CO2 (%)	CO2 (%)	Reading	02+C02	
Date	Time	Loc.	Anal.	Rotameter	G/S	cc/min	Rotameter	G/S	cc/min	SIP-THC (ppm)	THC (ppm)	O2 (%)	(%)	
12-Oct	Note: 160 ppm background THC through sampling train													
12-Oct	12:00	V4 disch	CO2/O2	OPEN			CLOSED			2.2	2.2	18.4	20.6	
			THC	OPEN			CLOSED			410	410.0			
12-Oct	12:00	V3 disch	CO2/O2	OPEN			CLOSED			3.5	3.5	15.9	19.4	
			THC	OPEN			CLOSED			220	220.0			
12-Oct	12:00	V3 inlet	CO2/O2	OPEN			CLOSED			2.9	2.9	17.5	20.4	
			THC	100	S	458	100	S	445	1230	2425.1			
12-Oct	12:00	V2 disch	CO2/O2	150	G	311	150	S	769	3.1	10.8	7.5	18.3	
			THC	100	G	168	150	S	769	1840	10262.4			
12-Oct	12:00	V1 disch	CO2/O2	50	S	169	150	S	769	2.8	15.5	3.8	19.3	
			THC	100	G	168	150	S	769	1450	8087.2			
12-Oct	12:00	V2-1C	O2									<1		
12-Oct	12:00	V2-1A	O2									18		
12-Oct	12:00	V2-2C	O2									1.5		
12-Oct	12:00	V2-2B	O2									5.5		
12-Oct	12:00	V2-3C	O2									<1		
12-Oct	12:00	V2-3A	O2									16.8		
12-Oct	12:00	V2-3B	O2									4.5		
12-Oct	12:00	V1-3C	O2									<1		
12-Oct	12:00	V1-3B	O2									2.3		
12-Oct	12:00	V1-3A	O2									10.5		
12-Oct	12:00	V1-1C	O2									1.4		
12-Oct	12:00	V1-1B	O2									1.5		
12-Oct	12:00	V1-1A	O2									1		
16-Oct	12:00	V1 disch	CO2/O2	100	S	458	100	S	445	4.8	9.5	9	18.5	
			THC	60	G	80	150	S	769	1500	15918.8			
16-Oct	12:00	V2 disch	CO2/O2	100	S	458	100	S	445	3.5	6.9	12.3	19.2	
			THC	50	G	54	150	S	769	1590	24232.8			
16-Oct	12:00	V2-3C	O2									6.6		
16-Oct	12:00	V1-3C	O2									9		
16-Oct	12:00	V1-1C	O2									10		

					CO2/THC DATA							O2 Data	
						Smpl			Dil.		Calc. Conc.	Gastech	
		Sample		Smpl (Lt)		Flow	Dil. (Rt.)		Flow	Gastech-CO2 (%)	CO2 (%)	Reading	02+C02
Date	Time	Loc.	Anal.	Rotameter	G/S	cc/min	Rotameter	G/S	cc/min	SIP-THC (ppm)	THC (ppm)	O2 (%)	(%)
16-Oct	12:00	V2-1C	CO2/O2	80	S	344				3.9		10	
16-Oct	12:00	V3 disch	CO2/O2	OPEN			CLOSED			3.1	3.1	16	
			THC	OPEN			CLOSED			430	430.0		
		Note: 180 ppm THC background in sampling train											
16-Oct	12:00	V3 inlet	CO2/O2	OPEN			CLOSED			4.3	4.3	15.2	19.5
			THC	50	S	169	140	S	703	1630	8410.4		
16-Oct	12:00	V4 disch	CO2/O2	OPEN			CLOSED			2.3	2.3	18	20.3
			THC	OPEN			CLOSED			180	180.0		
16-Oct	12:00	V3-1B	CO2/O2	OPEN			CLOSED			4.2	4.2	15.2	19.4
			THC	OPEN			CLOSED			1210	1210.0		
19-Oct	12:00	V1-1C	O2									11.8	
19-Oct	12:00	V1-2C	O2									8	
19-Oct	12:00	V1-3C	O2									8	
19-Oct	12:00	V2-3C	O2									9.3	
19-Oct	12:00	V2-2C	O2									13.8	
19-Oct	12:00	V2-1C	O2									12.8	
20-Oct	12:00	V4 dicsh	CO2/O2	OPEN			CLOSED			1	1.0	20	21.0
			THC	OPEN			CLOSED			9	9.0		
20-Oct	12:00	V3 disch	CO2/O2	OPEN			CLOSED			2.15	2.2	18	20.2
			THC	OPEN			CLOSED			13	13.0		
20-Oct	12:00	V3 inlet	CO2/O2	OPEN			CLOSED			3.7	3.7	16.5	20.2
			THC	50	S	169	148	S	760	1040	5716.9		
20-Oct	12:00	V2 disch	CO2/O2	OPEN			CLOSED			4.65	4.7	14.9	19.6
			THC	20	S	48	150	S	769	840	14297.5		
20-Oct	12:00	V1 disch	CO2/O2	100	S	458	100	S	445	3.8	7.5	12.6	20.1
			THC	20	S	48	150	S	769	770	13106.0		
20-Oct	12:00	V1-1C	O2									14	
20-Oct	12:00	V1-2C	O2									11	
20-Oct	12:00	V1-3C	O2									10.8	
20-Oct	12:00	V2-1C	O2									13	

				CO2/THC DATA								O2 Data	
						Smpl			Dil.		Calc. Conc.	Gastech	
		Sample		Smpl (Lt)		Flow	Dil. (Rt.)		Flow	Gastech-CO2 (%)	CO2 (%)	Reading	02+C02
Date	Time	Loc.	Anal.	Rotameter	G/S	cc/min	Rotameter	G/S	cc/min	SIP-THC (ppm)	THC (ppm)	O2 (%)	(%)
20-Oct	12:00	V2-2C	O2									14.5	
20-Oct	12:00	V2-3C	O2									9.6	
24-Oct	7:00	Calibrate FID - GC counts = 281 for 1491ppm standard.									1491.0		
24-Oct		Standard check with atmospheric air								0.03	.0	20.9	
24-Oct		Standard check with 5.1% CO2/N2								5.1	5.1	0	
24-Oct	7:28	V3 inlet	CO2/O2	OPEN			CLOSED			2.4	2.4	18	20.4
24-Oct			THC	OPEN			CLOSED			150	150.0		
24-Oct	7:59	V3A	CO2/O2	OPEN			CLOSED			2	2.0	18.5	20.5
24-Oct	8:01	V3B	CO2/O2	OPEN			CLOSED			2.3	2.3	18.2	20.5
24-Oct	8:06	V3B	CO2/O2	OPEN			CLOSED			2.5	2.5	18	20.5
24-Oct	8:08	V3 disch	CO2/O2	OPEN			CLOSED			2.1	2.1	18.5	20.6
24-Oct			THC	OPEN			CLOSED			14	14.0		
24-Oct	8:10	V4 inlet	CO2/O2	OPEN			CLOSED			0.03	.0	20.9	
24-Oct			THC	OPEN			CLOSED			9	9.0		
		Note: 5 ppm through sampling train.											
24-Oct	8:14	V4A	CO2/O2	OPEN			CLOSED			1.05	1.1	19.2	20.3
24-Oct			THC	OPEN			CLOSED			9	9.0		
24-Oct	8:23	V4B	CO2/O2	OPEN			CLOSED			1.15	1.2	19.2	20.4
24-Oct			THC	OPEN			CLOSED			8.5	8.5		
24-Oct	8:28	V4C	CO2/O2	OPEN			CLOSED			1.35	1.4	19.2	20.6
24-Oct			THC	OPEN			CLOSED			8.5	8.5		
24-Oct	8:31	V4 disch	CO2/O2	OPEN			CLOSED			1.5	1.5	19	20.5
24-Oct			THC	OPEN			CLOSED			8.5	8.5		
		Note: THC in atmosphere = 6 ppm											
24-Oct	8:57	V2 disch	CO2/O2	OPEN			CLOSED			5.1	5.1	13.5	18.6
24-Oct			THC	50	G	54	150	S	769	760	11583.0		
24-Oct	9:04	V2-1A	CO2/O2	OPEN			CLOSED			0.45	.5	19.8	20.3
24-Oct	9:06	V2-1B	CO2/O2	OPEN			CLOSED			4.3	4.3	14.7	19.0
24-Oct	9:08	V2-1C	CO2/O2	150	G	311	150	G	309	2.8	5.6	12.5	18.1
24-Oct	9:10	V2-2A	CO2/O2	OPEN			CLOSED			0.15	.2	20.2	20.4
24-Oct	9:17	V2-2B	CO2/O2	OPEN			CLOSED			3.3	3.3	16.3	19.6

					CO2/THC DATA							O2 Data	
						Smpl			Dil.		Calc. Conc.	Gastech	
		Sample		Smpl (Lt)		Flow	Dil. (Rt.)		Flow	Gastech-CO2 (%)	CO2 (%)	Reading	02+C02
Date	Time	Loc.	Anal.	Rotameter	G/S	cc/min	Rotameter	G/S	cc/min	SIP-THC (ppm)	THC (ppm)	O2 (%)	(%)
24-Oct	9:26	V2-2C	CO2/O2	OPEN			CLOSED			4.95	5.0	14	19.0
24-Oct	9:29	V2-3A	CO2/O2	OPEN			CLOSED			0.75	.8	19.5	20.3
24-Oct	9:30	V2-3B	CO2/O2	OPEN			CLOSED			4.4	4.4	14.8	19.2
24-Oct	9:32	V2-3C	CO2/O2	150	G	311	150	G	309	3.6	7.2	10	17.2
24-Oct	9:35	V1 disch	CO2/O2	150	G	311	150	G	309	2.8	5.6	13	18.6
			THC	50	G	54	150	S	769	690	10516.1		
24-Oct	9:42	V1-1A	CO2/O2	150	G	311	150	G	309	2.7	5.4	13.9	19.3
24-Oct	9:52	V1-1B	CO2/O2	150	G	311	150	G	309	2.2	4.4	15	19.4
24-Oct	9:55	V1-1C	CO2/O2	150	G	311	150	G	309	2.25	4.5	14.5	19.0
24-Oct	10:00	V1-2A	CO2/O2	OPEN			CLOSED			2	2.0	18.5	20.5
24-Oct	10:02	V1-2B	CO2/O2	OPEN			CLOSED			4.4	4.4	15	19.4
24-Oct	10:04	V1-2C	CO2/O2	150	G	311	150	G	309	3.5	7.0	12	19.0
24-Oct	10:06	V1-3A	CO2/O2	OPEN			CLOSED			1.45	1.5	19	20.5
24-Oct	10:09	V1-3B	CO2/O2	OPEN			CLOSED			4.4	4.4	14.5	18.9
24-Oct	10:10	V1-3C	CO2/O2	OPEN			CLOSED			3	3.0	16.5	19.5
		NOTE: Readings for V1-3B and V1-3C appear to be reversed.											
24-Oct	10:13	NOTE: Blowers turned off for shutdown test No. 1											
24-Oct	10:47	V1-1A	CO2/O2	150	G	311	150	G	309	2.65	5.3	13.2	18.5
24-Oct	10:50	V1-1B	CO2/O2	150	G	311	150	G	309	2.2	4.4	14.5	18.9
24-Oct	10:53	V1-1C	CO2/O2	OPEN			CLOSED			4.75	4.8	14	18.8
24-Oct	10:56	V1-2A	CO2/O2	OPEN			CLOSED			2.7	2.7	16.5	19.2
24-Oct	10:58	V1-2B	CO2/O2	OPEN			CLOSED			4.6	4.6	14.5	19.1
24-Oct	11:00	V1-2C	CO2/O2	150	G	311	150	G	309	3.2	6.4	12	18.4
24-Oct	11:04	V1-3A	CO2/O2	OPEN			CLOSED			2.1	2.1	17.2	19.3
24-Oct	11:08	V1-3B	CO2/O2	OPEN			CLOSED			3.2	3.2	16.1	19.3
24-Oct	11:10	V1-3C	CO2/O2	OPEN			CLOSED			4.7	4.7	13.7	18.4
24-Oct	11:14	V2-1A	CO2/O2	OPEN			CLOSED			0.6	.6	19.5	20.1
24-Oct	11:17	V2-1B	CO2/O2	OPEN			CLOSED			4.5	4.5	13.3	17.8
24-Oct	11:20	V2-1C	CO2/O2	150	G	311	150	G	309	2.8	5.6	12.2	17.8
24-Oct	11:25	V2-2A	CO2/O2	OPEN			CLOSED			0.15	.2	20.2	20.4
24-Oct	11:27	V2-2B	CO2/O2	OPEN			CLOSED			3.1	3.1	16	19.1
24-Oct	11:28	V2-2C	CO2/O2	OPEN			CLOSED			5	5.0	13.2	18.2

					CO2/THC DATA							O2 Data	
						Smpl			Dil.		Calc. Conc.	Gastech	
		Sample		Smpl (Lt)		Flow	Dil. (Rt.)		Flow	Gastech-CO2 (%)	CO2 (%)	Reading	02+C02
Date	Time	Loc.	Anal.	Rotameter	G/S	cc/min	Rotameter	G/S	cc/min	SIP-THC (ppm)	THC (ppm)	O2 (%)	(%)
24-Oct	11:30	V2-3A	CO2/O2	OPEN			CLOSED			1.1	1.1	18.5	19.6
24-Oct	11:32	V2-3B	CO2/O2	OPEN			CLOSED			4.4	4.4	14.2	18.6
24-Oct	11:34	V2-3C	CO2/O2	150	G	311	150	G	309	3.8	7.6	10	17.6
24-Oct	11:40	V3A	CO2/O2	OPEN			CLOSED			1.9	1.9	18	19.9
24-Oct	11:42	V3B	CO2/O2	OPEN			CLOSED			2.2	2.2	17.8	20.0
24-Oct	11:43	V3C	CO2/O2	OPEN			CLOSED			2.2	2.2	17.7	19.9
24-Oct	11:45	V4A	CO2/O2	OPEN			CLOSED			0.95	1.0	19	20.0
24-Oct	11:47	V4B	CO2/O2	OPEN			CLOSED			1.1	1.1	19	20.1
24-Oct	11:50	V4C	CO2/O2	OPEN			CLOSED			1.3	1.3	18.8	20.1
24-Oct	11:55	Standard check with atmospheric air								0.03	.0	20.5	
24-Oct	11:55	Standard check with 5.1% CO2/N2								5.1	5.1	0	
24-Oct	12:45	Standard check with atmospheric air								0.03	.0	20.9	
24-Oct	12:45	Standard check with 5.1% CO2/N2								5.1	5.1	0	
24-Oct	13:07	V1-1A	CO2/O2	80	S	350	80	S	337	3	5.9	12	17.9
24-Oct	13:09	V1-1B	CO2/O2	OPEN			CLOSED			4.8	4.8	13.8	18.6
24-Oct	13:14	V1-1C	CO2/O2	OPEN			CLOSED			4.9	4.9	13.6	18.5
24-Oct	13:19	V1-2A	CO2/O2	OPEN			CLOSED			3.8	3.8	13.4	17.2
24-Oct	13:24	V1-2B	CO2/O2	OPEN			CLOSED			4.85	4.9	13.8	18.7
24-Oct	13:26	V1-2C	CO2/O2	80	S	350	80	S	337	3.5	6.9	11.5	18.4
24-Oct	13:29	V1-3A	CO2/O2	OPEN			CLOSED			2.95	3.0	15.8	18.8
24-Oct	13:31	V1-3B	CO2/O2	OPEN			CLOSED			3.6	3.6	15.5	19.1
24-Oct	13:33	V1-3C	CO2/O2	OPEN			CLOSED			5.1	5.1	13	18.1
24-Oct	13:37	V2-1A	CO2/O2	OPEN			CLOSED			1.3	1.3	18.5	19.8
24-Oct	13:42	V2-1B	CO2/O2	80	S	350	80	S	337	2.85	5.6	12.2	17.8
24-Oct	13:44	V2-1C	CO2/O2	80	S	350	80	S	337	3.2	6.3	12	18.3
24-Oct	13:46	V2-2A	CO2/O2	OPEN			CLOSED			0.25	.3	20	20.3
24-Oct	13:48	V2-2B	CO2/O2	OPEN			CLOSED			3.75	3.8	14.6	18.4
24-Oct	13:50	V2-2C	CO2/O2	80	S	350	80	S	337	2.95	5.8	12.5	18.3
24-Oct	13:52	V2-3A	CO2/O2	OPEN			CLOSED			1.6	1.6	17.7	19.3
24-Oct	13:54	V2-3B	CO2/O2	OPEN			CLOSED			4	4.0	14.8	18.8
24-Oct	13:57	V2-3C	CO2/O2	80	S	350	80	S	337	4	7.9	8.6	16.5
24-Oct	14:02	V3A	CO2/O2	OPEN			CLOSED			1.95	2.0	18.2	20.2

				CO2/THC DATA								O2 Data	
						Smpl			Dil.		Calc. Conc.	Gastech	
		Sample		Smpl (Lt)		Flow	Dil. (Rt.)		Flow	Gastech-CO2 (%)	CO2 (%)	Reading	02+C02
Date	Time	Loc.	Anal.	Rotameter	G/S	cc/min	Rotameter	G/S	cc/min	SIP-THC (ppm)	THC (ppm)	O2 (%)	(%)
24-Oct	14:06	V3B	CO2/O2	OPEN			CLOSED			2.1	2.1	18.2	20.3
24-Oct	14:08	V3C	CO2/O2	OPEN			CLOSED			2.25	2.3	18	20.3
24-Oct	14:10	V4A	CO2/O2	OPEN			CLOSED			1.1	1.1	19.2	20.3
24-Oct	14:12	V4B	CO2/O2	OPEN			CLOSED			1.15	1.2	19.2	20.4
24-Oct	14:14	V4C	CO2/O2	OPEN			CLOSED			1.25	1.3	19.2	20.5
24-Oct	15:20	Standard check with atmospheric air								0.03	.0	20.9	20.9
24-Oct	15:20	Standard check with 5.1% CO2/N2								5.1	5.1	0	
24-Oct	15:25	V1-1A	CO2/O2	80	S	350	80	S	337	3	5.9	11	16.9
24-Oct	15:27	V1-1B	CO2/O2	80	S	350	80	S	337	2.7	5.3	13.5	18.8
24-Oct	15:30	V1-1C	CO2/O2	OPEN			CLOSED			4.9	4.9	13.7	18.6
24-Oct	15:33	V1-2A	CO2/O2	OPEN			CLOSED			4.5	4.5	12	16.5
24-Oct	15:36	V1-2B	CO2/O2	OPEN			CLOSED			5	5.0	13.2	18.2
24-Oct	15:38	V1-2C	CO2/O2	80	S	350	80	S	337	3.5	6.9	12	18.9
24-Oct	15:43	V1-3A	CO2/O2	OPEN			CLOSED			3.4	3.4	15	18.4
24-Oct	15:46	V1-3B	CO2/O2	OPEN			CLOSED			3.9	3.9	14.8	18.7
24-Oct	15:48	V1-3C	CO2/O2	80	S	350	80	S	337	2.8	5.5	13	18.5
24-Oct	15:50	V2-1A	CO2/O2	OPEN			CLOSED			1.2	1.2	18.5	19.7
24-Oct	15:53	V2-1B	CO2/O2	80	S	350	80	S	337	3	5.9	11.6	17.5
24-Oct	15:58	V2-1C	CO2/O2	80	S	350	80	S	337	3.3	6.5	11	17.5
24-Oct	16:08	V2-2A	CO2/O2	OPEN			CLOSED			0.35	.4	20	20.4
24-Oct	16:10	V2-2B	CO2/O2	OPEN			CLOSED			4.65	4.7	13	17.7
24-Oct	16:03	V2-2C	CO2/O2	80	S	350	80	S	337	3.2	6.3	11	17.3
24-Oct	16:16	V2-3A	CO2/O2	OPEN			CLOSED			2.2	2.2	16.5	18.7
24-Oct	16:18	V2-3B	CO2/O2	80	S	350	80	S	337	2.8	5.5	12	17.5
24-Oct	16:25	V2-3C	CO2/O2	OPEN			CLOSED			5.5	5.5	13.2	18.7
		NOTE: Valve left open on V2-3C. Disregard last reading.											
		Standard check with atmospheric air								0.03	.0	20.9	
		Standard check with 5.1% CO2/N2								5.1	5.1	0	
24-Oct	18:03	V1-1A	CO2/O2	80	S	350	80	S	337	3.6	7.1	8.5	15.6
24-Oct	18:07	V1-1B	CO2/O2	80	S	350	80	S	337	2.8	5.5	12	17.5
24-Oct	18:09	V1-1C	CO2/O2	80	S	350	80	S	337	2.9	5.7	12.2	17.9
24-Oct	18:13	V1-2A	CO2/O2	80	S	350	80	S	337	2.8	5.5	8.8	14.3

				CO2/THC DATA								O2 Data	
						Smpl			Dil.		Calc. Conc.	Gastech	
		Sample		Smpl (Lt)		Flow	Dil. (Rt.)		Flow	Gastech-CO2 (%)	CO2 (%)	Reading	02+C02
Date	Time	Loc.	Anal.	Rotameter	G/S	cc/min	Rotameter	G/S	cc/min	SIP-THC (ppm)	THC (ppm)	O2 (%)	(%)
24-Oct	18:16	V1-2B	CO2/O2	80	S	350	80	S	337	2.95	5.8	11.5	17.3
24-Oct	18:19	V1-2C	CO2/O2	80	S	350	80	S	337	3.7	7.3	10.4	17.7
24-Oct	18:22	V1-3A	CO2/O2	80	S	350	80	S	337	2.2	4.3	13	17.3
24-Oct	18:25	V1-3B	CO2/O2	80	S	350	80	S	337	2.6	5.1	12.5	17.6
24-Oct	18:28	V1-3C	CO2/O2	80	S	350	80	S	337	3.35	6.6	10.8	17.4
24-Oct	18:38	V2-1A	CO2/O2	OPEN			CLOSED			1.7	1.7	18	19.7
24-Oct	18:39	V2-1B	CO2/O2	80	S	350	80	S	337	3.65	7.2	9.2	16.4
24-Oct	18:44	V2-1C	CO2/O2	80	S	350	80	S	337	3.75	7.4	10	17.4
24-Oct	18:47	V2-2A	CO2/O2	OPEN			CLOSED			0.45	.5	19	19.5
24-Oct	18:51	V2-2B	CO2/O2	80	S	350	80	S	337	2.75	5.4	12	17.4
24-Oct	18:54	V2-2C	CO2/O2	80	S	350	80	S	337	3.75	7.4	9.8	17.2
24-Oct	18:58	V2-3A	CO2/O2	OPEN			CLOSED			2.3	2.3	16.6	18.9
24-Oct	19:00	V2-3B	CO2/O2	80	S	350	80	S	337	3.2	6.3	11	17.3
24-Oct	19:04	V2-3C	CO2/O2	80	S	350	80	S	337	4.2	8.2	8.5	16.7
24-Oct	19:14	V3A	CO2/O2	OPEN			CLOSED			2.3	2.3	18.2	20.5
24-Oct	19:16	V3B	CO2/O2	OPEN			CLOSED			2.4	2.4	18.1	20.5
24-Oct	19:18	V3C	CO2/O2	OPEN			CLOSED			2.5	2.5	18	20.5
24-Oct	19:20	V4A	CO2/O2	OPEN			CLOSED			1.4	1.4	19.2	20.6
24-Oct	19:22	V4B	CO2/O2	OPEN			CLOSED			1.35	1.4	19.3	20.7
24-Oct	19:25	V4C	CO2/O2	OPEN			CLOSED			1.4	1.4	19.2	20.6
24-Oct	19:29	Standard check with atmospheric air								0.03	.0	20.9	
24-Oct	19:29	Standard check with 5.1% CO2/N2								5.1	5.1	0	
24-Oct	22:16	Standard check with atmospheric air								0.03	.0	20.9	
24-Oct	22:16	Standard check with 5.1% CO2/N2								5.1	5.1	0	
24-Oct	22:26	V1-1A	CO2/O2	80	S	350	80	S	337	4.25	8.3	5.9	14.2
24-Oct	22:32	V1-1B	CO2/O2	80	S	350	80	S	337	3.35	6.6	10.5	17.1
24-Oct	22:35	V1-1C	CO2/O2	80	S	350	80	S	337	3.35	6.6	11.2	17.8
24-Oct	22:40	V1-2A	CO2/O2	80	S	350	80	S	337	3.7	7.3	6	13.3
24-Oct	22:44	V1-2B	CO2/O2	80	S	350	80	S	337	3.4	6.7	10.3	17.0
24-Oct	22:47	V1-2C	CO2/O2	80	S	350	80	S	337	4	7.9	10	17.9
24-Oct	22:50	V1-3A	CO2/O2	80	S	350	80	S	337	2.85	5.6	11	16.6
24-Oct	22:55	V1-3B	CO2/O2	80	S	350	80	S	337	3.2	6.3	10.8	17.1

					CO2/THC DATA							O2 Data	
						Smpl			Dil.		Calc. Conc.	Gastech	
		Sample		Smpl (Lt)		Flow	Dil. (Rt.)		Flow	Gastech-CO2 (%)	CO2 (%)	Reading	02+C02
Date	Time	Loc.	Anal.	Rotameter	G/S	cc/min	Rotameter	G/S	cc/min	SIP-THC (ppm)	THC (ppm)	O2 (%)	(%)
24-Oct	22:58	V1-3C	CO2/O2	80	S	350	80	S	337	3.85	7.6	9.6	17.2
24-Oct	23:05	V2-1A	CO2/O2	OPEN			CLOSED			1.9	1.9	18	19.9
24-Oct	23:07	V2-1B	CO2/O2	80	S	350	80	S	337	4.3	8.4	8	16.4
24-Oct	23:11	V2-1C	CO2/O2	80	S	350	80	S	337	4.2	8.2	8.5	16.7
24-Oct	23:15	V2-2A	CO2/O2	OPEN			CLOSED			0.5	.5	20	20.5
24-Oct	23:18	V2-2B	CO2/O2	80	S	350	80	S	337	3.4	6.7	10.5	17.2
24-Oct	23:23	V2-2C	CO2/O2	80	S	350	80	S	337	4.3	8.4	8.1	16.5
24-Oct	23:27	V2-3A	CO2/O2	OPEN			CLOSED			2.8	2.8	15.5	18.3
24-Oct	23:29	V2-3B	CO2/O2	80	S	350	80	S	337	3.8	7.5	9.5	17.0
24-Oct	23:34	V2-3C	CO2/O2	80	S	350	80	S	337	5.1	10.0	5.5	15.5
24-Oct	23:40	Standard check with atmospheric air								0.03	.0	20.9	
24-Oct	23:40	Standard check with 5.1% CO2/N2								5.1	5.1	0	
25-Oct	3:20	Standard check with atmospheric air								0.03	.0	20.9	
25-Oct	3:20	Standard check with 5.1% CO2/N2								5.1	5.1	0	
25-Oct	3:28	V1-1A	CO2/O2	50	S	169	110	S	516	2.65	10.7	4	14.7
25-Oct	3:34	V1-1B	CO2/O2	80	S	350	80	S	337	3.7	7.3	9.2	16.5
25-Oct	3:37	V1-1C	CO2/O2	80	S	350	80	S	337	3.6	7.1	10.2	17.3
25-Oct	3:42	V1-2A	CO2/O2	80	S	350	80	S	337	4.6	9.0	4.3	13.3
25-Oct	3:45	V1-2B	CO2/O2	80	S	350	80	S	337	3.8	7.5	9.9	16.4
25-Oct	3:50	V1-2C	CO2/O2	80	S	350	80	S	337	4.1	8.0	9.2	17.2
25-Oct	3:54	V1-3A	CO2/O2	80	S	350	80	S	337	3.4	6.7	8.8	15.5
25-Oct	3:59	V1-3B	CO2/O2	80	S	350	80	S	337	3.8	7.5	9	16.5
25-Oct	4:03	V1-3C	CO2/O2	80	S	350	80	S	337	4.3	8.4	8.4	16.8
25-Oct	4:07	V2-1A	CO2/O2	OPEN			CLOSED			2.7	2.7	16	18.7
25-Oct	4:11	V2-1B	CO2/O2	80	S	350	80	S	337	4.6	9.0	7	16.0
25-Oct	4:14	V2-1C	CO2/O2	80	S	350	80	S	337	4.4	8.6	8.1	16.7
25-Oct	4:19	V2-2A	CO2/O2	OPEN			CLOSED			0.9	.9	18.2	19.1
25-Oct	4:26	V2-2B	CO2/O2	80	S	350	80	S	337	3.7	7.3	8	15.3
25-Oct	4:31	V2-2C	CO2/O2	80	S	350	80	S	337	4.35	8.5	6.5	15.0
25-Oct	4:34	V2-3A	CO2/O2	OPEN			CLOSED			4.1	4.1	12.5	16.6
25 Oct	4:37	V2-3B	CO2/O2	80	S	350	80	S	337	4	7.9	7.2	15.1
25 Oct	4:42	V2-3C	CO2/O2	80	S	350	110	S	516	4.75	11.8	3.4	15.2

					CO2/THC DATA							O2 Data	
						Smpl			Dil.		Calc. Conc.	Gastech	
		Sample		Smpl (Lt)		Flow	Dil. (Rt.)		Flow	Gastech-CO2 (%)	CO2 (%)	Reading	02+C02
Date	Time	Loc.	Anal.	Rotameter	G/S	cc/min	Rotameter	G/S	cc/min	SIP-THC (ppm)	THC (ppm)	O2 (%)	(%)
25-Oct	4:48	Standard check with atmospheric air								0.03	.0	20.9	
25-Oct	4:48	Standard check with 5.1% CO2/N2								5.1	5.1	0	
25-Oct	8:45	Standard check with atmospheric air								0.03	.0	20.9	
25-Oct	8:45	Standard check with 5.1% CO2/N2								5.1	5.1	0	
25-Oct	8:49	V1-1A	CO2/O2	80	S	350	150	S	769	3.6	11.5	2.5	14.0
25-Oct	8:52	V1-1B	CO2/O2	80	S	350	150	S	769	2.8	9.0	7	16.0
25-Oct	8:56	V1-1C	CO2/O2	80	S	350	150	S	769	2.6	8.3	8	16.3
25-Oct	9:01	V1-2A	CO2/O2	50	S	169	150	S	769	2.1	11.7	2.2	13.9
25-Oct	9:05	V1-2B	CO2/O2	70	S	290	150	S	769	2.6	9.5	6.5	16.0
25-Oct	9:10	V1-2C	CO2/O2	50	S	169	150	S	769	1.9	10.5	7.4	17.9
25-Oct	9:14	V1-3A	CO2/O2	50	S	169	150	S	769	1.75	9.7	6	15.7
25-Oct	9:19	V1-3B	CO2/O2	110	G	203	150	S	769	2.1	10.1	6.3	16.4
25-Oct	9:23	V1-3C	CO2/O2	110	G	203	150	S	769	2.35	11.3	6	17.3
25-Oct	9:28	V2-1A	CO2/O2	OPEN			CLOSED			2.3	2.3	17	19.3
25-Oct	9:33	V2-1B	CO2/O2	110	G	203	150	S	769	2.6	12.4	5	17.4
25-Oct	9:37	V2-1C	CO2/O2	50	S	169	150	S	769	2.1	11.7	6	17.7
25-Oct	9:40	V2-2A	CO2/O2	OPEN			CLOSED			0.65	.7	19.5	20.2
25-Oct	9:52	V2-2B	CO2/O2	80	S	350	150	S	769	2.9	9.3	6.7	16.0
25-Oct	9:54	V2-2C	CO2/O2	80	S	350	150	S	769	3.7	11.8	3.6	15.4
25-Oct	9:58	V2-3A	CO2/O2	OPEN			CLOSED			4	4.0	13.1	17.1
25-Oct	10:00	V2-3B	CO2/O2	80	S	350	150	S	769	3.3	10.6	5.3	15.9
25-Oct	10:05	V2-3C	CO2/O2	80	S	350	150	S	769	4.5	14.4	1.5	15.9
25-Oct	10:11	Standard check with atmospheric air								0.05	.1	20.5	
25-Oct	10:11	Respanned								0.03	.0	20.9	
25-Oct	10:11	Standard check with 5.1% CO2/N2								5.1	5.1	0	
25-Oct	11:11	V3A	CO2/O2	OPEN			CLOSED			2.4	2.4	17.8	20.2
25-Oct	11:14	V3B	CO2/O2	OPEN			CLOSED			2.6	2.6	17.5	20.1
25-Oct	11:16	V3C	CO2/O2	OPEN			CLOSED			2.7	2.7	17.5	20.2
25-Oct	11:18	V4A	CO2/O2	OPEN			CLOSED			1.7	1.7	18.8	20.5
25-Oct	11:20	V4B	CO2/O2	OPEN			CLOSED			1.6	1.6	18.9	20.5
25-Oct	11:25	V4C	CO2/O2	OPEN			CLOSED			1.7	1.7	18.8	20.5

				CO2/THC DATA								O2 Data	
						Smpl			Dil.		Calc. Conc.	Gastech	
		Sample		Smpl (Lt)		Flow	Dil. (Rt.)		Flow	Gastech-CO2 (%)	CO2 (%)	Reading	02+C02
Date	Time	Loc.	Anal.	Rotameter	G/S	cc/min	Rotameter	G/S	cc/min	SIP-THC (ppm)	THC (ppm)	O2 (%)	(%)
25-Oct	11:26	Standard check with atmospheric air								0.06	.1	20.9	
25-Oct	14:46	Standard check with atmospheric air								0.03	.0	20.9	
25-Oct	14:46	Standard check with 5.1% CO2/N2								5.1	5.1	0	
25-Oct	14:52	V1-1A	CO2/O2	50	S	169	150	S	769	2.2	12.2	0.8	13.0
25-Oct	14:57	V1-1B	CO2/O2	50	S	169	150	S	769	1.8	10.0	4.9	14.9
25-Oct	15:00	V1-1C	CO2/O2	80	S	350	150	S	769	2.7	8.6	6.1	14.7
25-Oct	15:03	V1-2A	CO2/O2	80	S	350	150	S	769	3.5	11.2	0.8	12.0
25-Oct	15:06	V1-2B	CO2/O2	80	S	350	150	S	769	3.1	9.9	3.8	13.7
25-Oct	15:09	V1-2C	CO2/O2	80	S	350	150	S	769	3.2	10.2	5	15.2
25-Oct	15:14	V1-3A	CO2/O2	80	S	350	150	S	769	2.85	9.1	4	13.1
25-Oct	15:16	V1-3B	CO2/O2	80	S	350	150	S	769	3.3	10.6	3.4	14.0
25-Oct	15:19	V1-3C	CO2/O2	80	S	350	150	S	769	3.6	11.5	3	14.5
25-Oct	15:24	V2-1A	CO2/O2	110	S	541	110	S	516	3	5.9	8.6	14.5
25-Oct	15:29	V2-1B	CO2/O2	80	S	350	150	S	769	3.65	11.7	3.5	15.2
25-Oct	15:30	V2-1C	CO2/O2	80	S	350	150	S	769	3.45	11.0	4.8	15.8
25-Oct	15:37	V2-2A	CO2/O2	OPEN			CLOSED			2.2	2.2	13.9	16.1
25-Oct	15:40	V2-2B	CO2/O2	80	S	350	150	S	769	3.2	10.2	4.5	14.7
25-Oct	15:43	V2-2C	CO2/O2	70	S	290	150	S	769	3	11.0	3.5	14.5
25-Oct	15:46	V2-3A	CO2/O2	110	S	541	110	S	516	3.6	7.0	6.5	13.5
25-Oct	15:50	V2-3B	CO2/O2	70	S	290	150	S	769	3	11.0	3.8	14.8
25-Oct	15:55	V2-3C	CO2/O2	70	S	290	150	S	769	3.9	14.2	0.5	14.7
25-Oct	15:58	Standard check with atmospheric air								0.03	.0	20.9	
25-Oct	15:58	Standard check with 5.1% CO2/N2								5	5.0	0	
25-Oct	20:44	Standard check with atmospheric air								0.03	.0	20.9	
25-Oct	20:44	ɔck with 5.1% CO2/N2								5.1	5.1	0	
25-Oct	20:50	V1-1A	CO2/O2	70	S	290	150	S	769	3.8	13.9	0.5	14.4
25-Oct	21:01	V1-1B	CO2/O2	80	S	350	150	S	769	3.45	11.0	3.3	14.3
25-Oct	21:05	V1-1C	CO2/O2	50	S	169	150	S	769	2.25	12.5	4.3	16.8
25-Oct	21:08	V1-2A	CO2/O2	50	S	169	150	S	769	2.65	14.7	0.5	15.2
25-Oct	21:12	V1-2B	CO2/O2	50	S	169	150	S	769	2.55	14.2	2.1	16.3
25-Oct	21:16	V1-2C	CO2/O2	50	S	169	150	S	769	2.5	13.9	3.4	17.3
25-Oct	21:20	V1-3A	CO2/O2	50	S	169	150	S	769	2.5	13.9	1.2	15.1

					CO2/THC DATA							O2 Data	
						Smpl			Dil.		Calc. Conc.	Gastech	
		Sample		Smpl (Lt)		Flow	Dil. (Rt.)		Flow	Gastech-CO2 (%)	CO2 (%)	Reading	02+C02
Date	Time	Loc.	Anal.	Rotameter	G/S	cc/min	Rotameter	G/S	cc/min	SIP-THC (ppm)	THC (ppm)	O2 (%)	(%)
25-Oct	21:24	V1-3B	CO2/O2	50	S	169	150	S	769	2.65	14.7	1.7	16.4
25-Oct	21:29	V1-3C	CO2/O2	50	S	169	150	S	769	2.65	14.7	2	16.7
25-Oct	21:35	V2-1A	CO2/O2	150	S	777	150	S	769	3.8	7.6	6.2	13.8
25-Oct	21:43	V2-1B	CO2/O2	50	S	169	150	S	769	2.45	13.6	3	16.6
25-Oct	21:50	V2-1C	CO2/O2	80	S	350	150	S	769	3.6	11.5	4.1	15.6
25-Oct	21:58	V2-2A	CO2/O2	OPEN			CLOSED			3.85	3.9	10.8	14.7
25-Oct	22:00	V2-2B	CO2/O2	50	S	169	150	S	769	2.3	12.8	2.8	15.6
25-Oct	22:05	V2-2C	CO2/O2	50	S	169	150	S	769	2.4	13.3	1.7	15.0
25-Oct	22:09	V2-3A	CO2/O2	110	S	541	110	S	516	4.4	8.6	4.9	13.5
25-Oct	22:15	V2-3B	CO2/O2	50	S	169	150	S	769	2.5	13.9	2.3	16.2
25-Oct	22:18	V2-3C	CO2/O2	50	S	169	150	S	769	2.75	15.3	0.4	15.7
25-Oct	22:20	Standard check with atmospheric air								0.03	.0	20.9	
25-Oct	22:20	Standard check with 5.1% CO2/N2								5.1	5.1	0	
26-Oct	8:53	Standard check with atmospheric air								0.03	.0	20.9	
26-Oct	8:53	Standard check with 5.1% CO2/N2								5.1	5.1	0	
26-Oct	9:02	V1-1A	CO2/O2	50	S	169	150	S	769	2.5	13.9	0.3	14.2
26-Oct	9:06	V1-1B	CO2/O2	50	S	169	150	S	769	2.45	13.6	0.8	14.4
26-Oct	9:10	V1-1C	CO2/O2	50	S	169	150	S	769	2.35	13.0	1.2	14.2
26-Oct	9:14	V1-2A	CO2/O2	50	S	169	150	S	769	2.5	13.9	0.4	14.3
26-Oct	9:17	V1-2B	CO2/O2	50	S	169	150	S	769	2.6	14.4	0.2	14.6
26-Oct	9:20	V1-2C	CO2/O2	50	S	169	150	S	769	2.6	14.4	0.3	14.7
26-Oct	9:23	V1-3A	CO2/O2	50	S	169	150	S	769	2.5	13.9	0.1	14.0
26-Oct	9:27	V1-3B	CO2/O2	50	S	169	150	S	769	2.65	14.7	0.1	14.8
26-Oct	9:30	V1-3C	CO2/O2	50	S	169	150	S	769	2.75	15.3	0	15.3
26-Oct	9:44	V2-1A	CO2/O2	50	S	169	150	S	769	1.9	10.5	2.6	13.1
26-Oct	9:50	V2-1B	CO2/O2	50	S	169	150	S	769	2.6	14.4	0.2	14.6
26-Oct	9:55	V2-1C	CO2/O2	50	S	169	150	S	769	2.55	14.2	0.2	14.4
26-Oct	9:59	V2-2A	CO2/O2	110	S	541	110	S	516	3.1	6.1	5	11.1
26-Oct	10:02	V2-2B	CO2/O2	50	S	169	150	S	769	2.5	13.9	0.2	14.1
26-Oct	10:07	V2-2C	CO2/O2	50	S	169	150	S	769	2.45	13.6	0.1	13.7
26-Oct	10:12	V2-3A	CO2/O2	50	S	169	150	S	769	2.2	12.2	1.1	13.3
26-Oct	10:17	V2-3B	CO2/O2	50	S	169	150	S	769	2.6	14.4	0.4	14.8

					CO2/THC DATA								
						Smpl			Dil.		Calc. Conc.	O2 Data Gastech	
		Sample		Smpl (Lt)		Flow	Dil. (Rt.)		Flow	Gastech-CO2 (%)	CO2 (%)	Reading	02+C02
Date	Time	Loc.	Anal.	Rotameter	G/S	cc/min	Rotameter	G/S	cc/min	SIP-THC (ppm)	THC (ppm)	O2 (%)	(%)
26-Oct	10:20	V2-3C	CO2/O2	50	S	169	150	S	769	2.75	15.3	0.1	15.4
26-Oct	10:25	Standard check with atmospheric air								0.03	.0	20.9	
26-Oct	10:25	Standard check with 5.1% CO2/N2								5.0	5.0	0.1	
26-Oct	10:43	V3A	CO2/O2	OPEN			CLOSED			2.55	2.6	17.5	20.1
26-Oct	10:45	V3B	CO2/O2	OPEN			CLOSED			2.6	2.6	17.3	19.9
26-Oct	10:47	V3C	CO2/O2	OPEN			CLOSED			2.75	2.8	17.1	19.9
26-Oct	10:50	V4A	CO2/O2	OPEN			CLOSED			1.7	1.7	18.5	20.2
26-Oct	10:52	V4B	CO2/O2	OPEN			CLOSED			1.6	1.6	18.5	20.1
26-Oct	10:54	V4C	CO2/O2	OPEN			CLOSED			1.7	1.7	18.5	20.2
26-Oct	12:00	Blowers on at 15 L/min treatment and 2.5 L/min. background.											
27-Oct	8:30	Calibration of FID								GC counts	Conc. (ppm)		
										1	Background		
										12	101.0		
										80	505.0		
										152	1005.0		
27-Oct	9:00	Standard check with atmospheric air								0.03	.0	20.9	
27-Oct	9:00	Standard check with 5.1% CO2/N2								5.1	5.1	0	
27-Oct	9:10	Background through pump only									3.0		
27-Oct	9:20	Background through sampling train and dilution rotameter									8.0		
27-Oct	9:30	Background through sampling train and sample rotameter.									13.0		
27-Oct	9:40	Background through pump and dedicated sampling line.									1.0		
27-Oct	9:45	V4B	CO2/O2	OPEN			CLOSED			1.3	1.3	19.2	20.5
27-Oct	9:49	V4C	CO2/O2	OPEN			CLOSED			1.5	1.5	18.8	20.3
27-Oct	9:53	V4 disch	CO2/O2	OPEN			CLOSED			1.6	1.6	18.8	20.4
27-Oct			THC	OPEN			CLOSED			0	.0		
27-Oct	10:00	V3 disch	CO2/02	OPEN			CLOSED			2.6	2.6	17.2	19.8
27-Oct			THC	OPEN			CLOSED			73	73.0		
27-Oct	10:07	V3A	CO2/O2	OPEN			CLOSED			3.5	3.5	15.5	19.0
27-Oct			THC	OPEN			CLOSED			195	195.0		
27-Oct	10:09	V3B	CO2/O2	OPEN			CLOSED			4.1	4.1	14.7	18.8

				CO2/THC DATA								O2 Data	
						Smpl			Dil.		Calc. Conc.	Gastech	
		Sample		Smpl (Lt)		Flow	Dil. (Rt.)		Flow	Gastech-CO2 (%)	CO2 (%)	Reading	02+C02
Date	Time	Loc.	Anal.	Rotameter	G/S	cc/min	Rotameter	G/S	cc/min	SIP-THC (ppm)	THC (ppm)	O2 (%)	(%)
27-Oct			THC	OPEN			CLOSED			940	940.0		
27-Oct	10:12	V3C	CO2/02	OPEN			CLOSED			3.9	3.9	14.7	18.6
27-Oct			THC	OPEN			CLOSED			540	540.0		
27-Oct	10:15	V3 inlet	CO2/O2	OPEN			CLOSED			4.6	4.6	14.5	19.1
			THC	80	G	122	150	S	769	620	4528.0		
27-Oct	10:23	V1-1A	O2	OPEN			CLOSED					10	
27-Oct	10:24	V1-1B	O2	OPEN			CLOSED					10	
27-Oct	10:26	V1-1C	O2	OPEN			CLOSED					7.5	
27-Oct	10:27	V1-2A	O2	OPEN			CLOSED					17.2	
27-Oct	10:28	V1-2B	O2	OPEN			CLOSED					12.2	
27-Oct	10:31	V1-2C	O2	OPEN			CLOSED					8.5	
27-Oct	10:32	V1-3A	O2	OPEN			CLOSED					17.2	
27-Oct	10:33	V1-3B	O2	OPEN			CLOSED					12	
27-Oct	10:34	V1-3C	O2	OPEN			CLOSED					7.2	
27-Oct	10:36	V2-1A	O2	OPEN			CLOSED					18.5	
27-Oct	10:37	V2-1B	O2	OPEN			CLOSED					9.5	
27-Oct	10:38	V2-1C	O2	OPEN			CLOSED					3.5	
27-Oct	10:39	V2-2A	O2	OPEN			CLOSED					19.8	
27-Oct	10:40	V2-2B	O2	OPEN			CLOSED					5	
27-Oct	10:41	V2-2C	O2	OPEN			CLOSED					0.2	
27-Oct	10:45	V2-3A	O2	OPEN			CLOSED					18	
27-Oct	10:46	V2-3B	O2	OPEN			CLOSED					7	
27-Oct	10:47	V2-3C	O2	OPEN			CLOSED						
27-Oct	10:48	V2 disch	CO2/O2	110	S	541	110	S	516	4.2	8.2	9	17.2
27-Oct			THC	45	G	54	150	S	769	910	13869.1		
27-Oct	11:11	V1 disch	CO2/O2	110	S	541	110	S	516	4.6	9.0	9.1	18.1
27-Oct			THC	50	G	54	150	S	769	675	10287.5		
27-Oct	11:15	Standard check with atmospheric air								0.03	.0	20.9	
27-Oct	11:15	Standard check with 5.1% CO2/N2								5.1	5.1	0	
27-Oct	11:20	Standard check with 1000 ppm std.									970-980		

				CO2/THC DATA							O2 Data	
					Smpl			Dil.		Calc. Conc.	Gastech	
Date/Time	Sample		Smpl (Lt)		Flow	Dil. (Rt.)		Flow	Gastech-CO2 (%)	CO2 (%)	Reading	02+C02
m/d/y/ h:mm	Loc.	Anal.	Rotameter	G/S	cc/min	Rotameter	G/S	cc/min	SIP-THC (ppm)	THC (ppm)	O2 (%)	(%)
10/31/89 12:00	V4 disch	CO2/02	OPEN			CLOSED			1.3	1.3	19.3	20.6
		THC	OPEN			CLOSED			0	0.0		
10/31/89 12:00	V3 disch	CO2/02	OPEN			CLOSED			2.8	2.8	17	19.8
		THC	OPEN			CLOSED			97	97.0		
10/31/89 12:00	V3 inlet	CO2/02	OPEN			CLOSED			3.8	3.8	16	19.8
		THC	50	S	169	150	S	769	630	3496.7		
10/31/89 12:00	V2 disch	CO2/02	95	S	429	95	S	416	3.1	6.1	11.2	17.3
		THC	30	S	102	150	S	769	1000	8539.2		
10/31/89 12:00	V1 disch	CO2/02	100	S	458	100	S	445	3.1	6.1	12.6	18.7
		THC	30	S	102	150	S	769	730	6233.6		
11/3/89 12:00	V4 disch	CO2/02	OPEN			CLOSED			1.2	1.2	19.4	20.6
		THC	OPEN			CLOSED			ND	ND		
11/3/89 12:00	V3 disch	CO2/02	OPEN			CLOSED			2.6	2.6	18	20.6
		THC	OPEN			CLOSED			115	115.0		
11/3/89 12:00	V3 inlet	CO2/02	OPEN			CLOSED			2.7	2.7	17.5	20.2
		THC	100	S	458	100	S	445	680	1340.7		
11/3/89 12:00	V2 disch	CO2/02	100	S	458	100	S	445	4.4	8.7	10	18.7
		THC	20	S	48	150	S	769	820	13957.1		
11/3/89 12:00	V1 disch	CO2/02	100	S	458	100	S	445	4.4	8.7	10.5	19.2
		THC	30	S	102	150	S	769	800	6831.4		
11/6/89 12:00	V4 disch	CO2/02	OPEN			CLOSED			1.45	1.5	19.2	20.7
		THC	OPEN			CLOSED			ND	ND		
11/6/89 12:00	V3 disch	CO2/02	OPEN			CLOSED			1.7	1.7	19	20.7
		THC	OPEN			CLOSED			150	150.0		
11/6/89 12:00	V3 inlet	CO2/02	OPEN			CLOSED			1.7	1.7	19	20.7
		THC	OPEN			CLOSED			250	250.0		
11/6/89 12:00	V2 disch	CO2/02	100	S	458	100	S	445	3.6	7.1	12.5	19.6
		THC	20	S	48	150	S	769	7[illegible]0	12425.2		
11/6/89 12:00	V1 disch	CO2/02	100	S	458	100	S	445	2[illegible]	5.7	14	19.7
		THC	40	S	145	150	S	769	950	5988.3		
11/9/89 12:00	V4 disch	CO2/02	OPEN			CLOSED			1.45	1.5	19.5	21.0
		THC	OPEN			CLOSED			ND	ND		

				CO2/THC DATA							O2 Data	
					Smpl			Dil.		Calc. Conc.	Gastech	
Date/Time	Sample		Smpl (Lt)		Flow	Dil. (Rt.)		Flow	Gastech-CO2 (%)	CO2 (%)	Reading	02+C02
m/d/y/ h:mm	Loc.	Anal.	Rotameter	G/S	cc/min	Rotameter	G/S	cc/min	SIP-THC (ppm)	THC (ppm)	O2 (%)	(%)
11/9/89 12:00	V3 disch	CO2/02	OPEN			CLOSED			2	2.0	19	21.0
		THC	OPEN			CLOSED			1050	1050.0		
11/9/89 12:00	V3 inlet	CO2/02	OPEN			CLOSED			2.6	2.6	18	20.6
		THC	100	S	458	100	S	445	710	1399.8		
11/9/89 12:00	V2 disch	CO2/02	100	S	458	100	S	445	4.45	8.8	10.7	19.5
		THC	25	S	81	150	S	769	780	8185.2		
11/9/89 12:00	V1 disch	CO2/02	100	S	458	100	S	445	3.7	7.3	13	20.3
		THC	30	S	102	150	S	769	720	6148.2		
11/14/89 15:00	V4 disch	CO2/02	OPEN			CLOSED			1.4	1.4	19.4	20.8
		THC	OPEN			CLOSED			ND	ND		
11/14/89 15:00	V3 disch	CO2/02	OPEN			CLOSED			2	2.0	19	21.0
		THC	OPEN			CLOSED			530	530.0		
11/14/89 15:00	V3 inlet	CO2/02	OPEN			CLOSED			2.6	2.6	17.6	20.2
		THC	60	S	239	130	S	635	960	3510.6		
11/14/89 15:00	V2 disch	CO2/02	100	S	458	100	S	445	2.43	4.8	15.8	20.6
		THC	25	S	81	150	S	769	680	7135.8		
11/14/89 15:00	V1 disch	CO2/02	50	S	169	150	S	769	1.2	6.7	15	21.7
		THC	30	S	102	150	S	769	775	6617.9		
11/14/89 15:00	V21C	O2							3.8	3.8	16	19.8
11/14/89 15:00	V23C	O2							4.8	4.8	14.6	19.4
11/14/89 15:00	V11C	O2							4	4.0	15.7	19.7
11/14/89 15:00	V13C	O2							3.8	3.8	16	19.8
11/14/89 15:00	NOTE: Rotometer V1 to V3 adjusted to 100											
11/16/89 15:00	Standard check with atmospheric air											
11/16/89 15:00	Standard check with 5.1% CO2/N2								5.2	5.2	0	
11/16/89 15:00	Standard check with 1005 ppm std. GC Counts = 138								1005	1005.0		
11/16/89 15:00	V4 disch	CO2/02	OPEN			CLOSED			0.9	0.9	20	20.9
		THC	OPEN			CLOSED			ND	ND		
11/16/89 15:00	V3 disch	CO2/02	OPEN			CLOSED			2	2.0	18.5	20.5
		THC	OPEN			CLOSED			90	90.0		
11/16/89 15:00	V3 inlet	CO2/02	OPEN			CLOSED			2.65	2.7	17.8	20.5
		THC	85	S	371	85	S	359	600	1180.6		

			CO2/THC DATA								O2 Data	
					Smpl			Dil.		Calc. Conc.	Gastech	
Date/Time	Sample		Smpl (Lt)		Flow	Dil. (Rt.)		Flow	Gastech-CO2 (%)	CO2 (%)	Reading	02+C02
m/d/y/ h:mm	Loc.	Anal.	Rotameter	G/S	cc/min	Rotameter	G/S	cc/min	SIP-THC (ppm)	THC (ppm)	O2 (%)	(%)
11/16/89 15:00	V2 disch	CO2/02	100	S	458	100	S	445	2.8	5.5	14	19.5
		THC	70	S	290	140	S	703	1185	4057.6		
11/16/89 15:00	V1 disch	CO2/02	100	S	458	100	S	445	2.7	5.3	14.8	20.1
		THC	80	S	122	110	S	516	1040	5438.7		
11/21/89 15:00	Standard check with atmospheric air											
11/21/89 15:00	Standard check with 5.1% CO2/N2											
11/21/89 15:00	Standard check with 1005 ppm std. GC Counts = 124								1005	1005.0		
11/21/89 15:00	V4 disch	CO2/02	OPEN			CLOSED			1	1.0	19.5	20.5
		THC	OPEN			CLOSED			ND	ND		
11/21/89 15:00	V3 disch	CO2/02	OPEN			CLOSED			1.3	1.3	19.4	20.7
		THC	OPEN			CLOSED			265	265.0		
11/21/89 15:00	V3 inlet	CO2/02	Inoperable - No flow									
		THC										
11/21/89 15:00	V2 disch	CO2/02	100	S	458	100	S	445	2.7	5.3	13.2	18.5
		THC	50	S	169	150	S	769	950	5272.8		
11/21/89 15:00	V1 disch	CO2/02	OPEN			CLOSED			4.3	4.3	15	19.3
		THC	50	S	169	150	S	769	790	4384.7		
			Note: Nutrient shut off from either 18/19 Nov until 1600 hrs. 21 Nov. New tank mixed .									
11/24/89 14:00	Standard check with atmospheric air											
11/24/89 14:00	Standard check with 5.1% CO2/N2											
11/24/89 14:00	Standard check with 1005 ppm std. GC Counts = 139								1005	1005.0		
11/24/89 14:00	V4 disch	CO2/02	OPEN			CLOSED			0.7	0.7	20.4	21.1
		THC	OPEN			CLOSED			ND	ND		
11/24/89 14:00	V3 disch	CO2/02	OPEN			CLOSED			1.3	1.3	19.7	21.0
		THC	OPEN			CLOSED			400	400.0		
11/24/89 14:00	V3 inlet	CO2/02	OPEN			CLOSED			2.4	2.4	18.4	20.8
		THC	100	S	458	100	S	445	690	1360.4		
			Note: V3 inlet operating as of 1400 hrs today.									
11/24/89 14:00	V2 disch	CO2/02	OPEN			CLOSED			4.9	4.9	13.8	18.7
		THC	50	S	169	150	S	769	712	3951.8		
11/24/89 14:00	V1 disch	CO2/02	OPEN			CLOSED			4.8	4.8	15	19.8
		THC	50	S	169	150	S	769	487	2703.0		

				CO2/THC DATA							O2 Data	
					Smpl			Dil.		Calc. Conc.	Gastech	
Date/Time	Sample		Smpl (Lt)		Flow	Dil. (Rt.)		Flow	Gastech-CO2 (%)	CO2 (%)	Reading	02+C02
m/d/y/ h:mm	Loc.	Anal.	Rotameter	G/S	cc/min	Rotameter	G/S	cc/min	SIP-THC (ppm)	THC (ppm)	O2 (%)	(%)
11/24/89 14:00	V1-1C	CO2/O2	OPEN			CLOSED			5	5.0	14.5	19.5
11/24/89 14:00	V1-3C	CO2/02	150	S	777	150	S	769	4	8.0	12.5	20.5
11/24/89 14:00	V2-3C	CO2/02	NO FLOW									
11/24/89 14:00	V2-3B	CO2/O2	50	S	169	150	S	769	2.4	13.3	7.5	20.8
11/24/89 14:00	V2-1C	CO2/O2	OPEN			CLOSED			4.9	4.9	13.5	18.4
11/28/89 11:30	Standard check with atmospheric air								0.03	0.0	20.9	
11/28/89 11:30	Standard check with 5.1% CO2/N2								5.1	5.1	0	
11/28/89 11:30	Standard check with 1005 ppm std. GC Counts = 108								1005	1005.0		
	Contamination through sampling train- sample side								29	29.0		
	Contamination through sampling train- dilution side								18	18.0		
11/28/89 11:53	V1-1A	CO2/02	OPEN			CLOSED			4.6	4.6	14.4	19.0
		THC	150	G	311	150	S	769	1040	3611.6		
11/28/89 11:57	V1-1B	CO2/02	OPEN			CLOSED			4.8	4.8	14.5	19.3
		THC	80	G	122	150	S	769	840	6134.8		
11/28/89 12:02	V1-1C	CO2/02	110	S	541	110	S	516	3	5.9	13.6	19.5
		THC	110	G	203	150	S	769	920	4405.1		
11/28/89 12:08	V1-2A	CO2/02	OPEN			CLOSED			2.3	2.3	17.8	20.1
		THC	150	S	777	110	S	516	920	1531.0		
11/28/89 12:13	V1-2B	CO2/02	OPEN			CLOSED			3.8	3.8	15.8	19.6
		THC	150	G	311	150	S	769	770	2674.0		
11/28/89 12:18	V1-2C	CO2/02	110	S	541	110	S	516	3.6	7.0	12.4	19.4
		THC	110	G	203	150	S	769	775	3710.8		
11/28/89 12:24	V1-3A	CO2/02	OPEN			CLOSED			1.8	1.8	18.5	20.3
		THC	50	G	54	150	S	769	970	14783.5		
11/28/89 12:32	V1-3B	CO2/02	OPEN			CLOSED			3.3		16.4	16.4
		THC	110	G	203	150	S	769	800	3830.5		
11/28/89 12:37	V1-3C	CO2/02	OPEN			CLOSED			4.6	4.6	14.6	19.2
		THC	110	S	541	150	S	769	880	2130.9		
11/28/89 12:43	V1 disch	CO2/02	OPEN			CLOSED			4.5	4.5	14.7	19.2
		THC	110	G	203	150	S	769	1025	4907.9		
11/28/89 12:50	V2-1A	CO2/02	OPEN			CLOSED			0.5	0.5	19.9	20.4
		THC	OPEN			CLOSED			212	212.0		

				CO2/THC DATA							O2 Data	
					Smpl			Dil.		Calc. Conc.	Gastech	
Date/Time	Sample		Smpl (Lt)		Flow	Dil. (Rt.)		Flow	Gastech-CO2 (%)	CO2 (%)	Reading	02+C02
m/d/y/ h:mm	Loc.	Anal.	Rotameter	G/S	cc/min	Rotameter	G/S	cc/min	SIP-THC (ppm)	THC (ppm)	O2 (%)	(%)
11/28/89 12:55	V2-1B	CO2/02	OPEN			CLOSED			3.6	3.6	15.2	18.8
		THC	150	G	311	150	S	769	825	2865.0		
11/28/89 13:00	V2-1C	CO2/02	110	S	541	110	S	516	3.1	6.1	12.2	18.3
		THC	110	G	203	150	S	769	650	3112.3		
11/28/89 13:09	V2-2A	CO2/02	OPEN			CLOSED			0.25	0.3	20.5	20.8
		THC	OPEN			CLOSED			185	185.0		
11/28/89 13:18	V2-2B	CO2/02	110	S	541	110	S	516	3.9	7.6	10	17.6
		THC	110	G	203	150	S	769	900	4309.4		
11/28/89 13:23	V2-2C	CO2/02	150	G	311	150	S	769	3.7	12.8	3.2	16.0
		THC	50	G	54	150	S	769	900	13716.7		
11/28/89 13:33	V2-3A	CO2/02	OPEN			CLOSED			0.7	0.7	19.8	20.5
		THC	OPEN			CLOSED			150	150.0		
11/28/89 13:37	V2-3B	CO2/02	110	S	541	110	S	516	2.9	5.7	13	18.7
		THC	150	G	311	150	S	769	730	2535.0		
11/28/89 13:42	V2-3C	CO2/02	110	S	541	110	S	516	4.4	8.6	9.1	17.7
		THC	69	G	98	150	S	769	900	7962.2		
11/28/89 13:50	V2 disch	CO2/02	110	S	541	110	S	516	2.8	5.5	13	18.5
		THC	80	G	122	150	S	769	870	6353.9		
11/28/89 14:07	V4A	CO2/02	OPEN			CLOSED			0.7	0.7	19.8	20.5
		THC	OPEN			CLOSED			2	2.0		
11/28/89 14:10	V4B	CO2/02	OPEN			CLOSED			0.8	0.8	19.8	20.6
		THC	OPEN			CLOSED			2	2.0		
11/28/89 14:15	V4C	CO2/02	OPEN			CLOSED			0.9	0.9	19.7	20.6
		THC	OPEN			CLOSED			2	2.0		
11/28/89 14:20	V4 disch	CO2/02	OPEN			CLOSED			0.9	0.9	19.6	20.5
		THC	OPEN			CLOSED			2	2.0		
11/28/89 14:25	V3 disch	CO2/02	OPEN			CLOSED			1.6	1.6	18.7	20.3
		THC	OPEN			CLOSED			5	5.0		
11/28/89 14:30	V3A	CO2/02	OPEN			CLOSED			2	2.0	18.1	20.1
		THC	OPEN			CLOSED			6	6.0		
11/28/89 14:33	V3B	CO2/02	OPEN			CLOSED			2.2	2.2	18	20.2
		THC	OPEN			CLOSED			20	20.0		

				CO2/THC DATA								O2 Data	
					Smpl			Dil.			Calc. Conc.	Gastech	
Date/Time	Sample		Smpl (Lt)		Flow	Dil. (Rt.)		Flow	Gastech-CO2 (%)		CO2 (%)	Reading	02+C02
m/d/y/ h:mm	Loc.	Anal.	Rotameter	G/S	cc/min	Rotameter	G/S	cc/min	SIP-THC (ppm)		THC (ppm)	O2 (%)	(%)
11/28/89 14:36	V3C	CO2/02	OPEN			CLOSED			2.1		2.1	18.1	20.2
		THC	OPEN			CLOSED			8		8.0		
11/28/89 14:39	V3 inlet	CO2/02	OPEN			CLOSED			2.2		2.2	18.1	20.3
		THC	110	S	541	110	S	516	830		1621.6		
11/28/89 15:11	Blowers off for shutdown test no. 2												
11/28/89 15:15	Standard check with atmospheric air								0.03		0.0	20.9	
	Standard check with 5.1% CO2/N2								5.1		5.1	0	
	Standard check with 1005 ppm std. GC Counts = 124								1200		1200.0		
	Note: Concentrations could be as much as 20% too high												
11/28/89 16:10	V1-1A	CO2/02	OPEN			CLOSED			4.9		4.9	13.8	18.7
11/28/89 16:12	V1-1B	CO2/02	OPEN			CLOSED			4.85		4.9	14	18.9
11/28/89 16:14	V1-1C	CO2/02	110	S	541	110	S	516	3		5.9	13.5	19.4
11/28/89 16:18	V1-2A	CO2/02	OPEN			CLOSED			2.95		3.0	16.2	19.2
11/28/89 16:21	V1-2B	CO2/02	OPEN			CLOSED			4.1		4.1	15.5	19.6
11/28/89 16:24	V1-2C	CO2/02	110	S	541	110	S	516	3.4		6.6	13	19.6
11/28/89 16:28	V1-3A	CO2/02	OPEN			CLOSED			2.5		2.5	17	19.5
11/28/89 16:30	V1-3B	CO2/02	OPEN			CLOSED			3.6		3.6	16.2	19.8
11/28/89 16:33	V1-3C	CO2/02	OPEN			CLOSED			4.85		4.9	14.6	19.5
11/28/89 16:36	V2-1A	CO2/02	OPEN			CLOSED			1.2		1.2	18.5	19.7
11/28/89 16:38	V2-1B	CO2/02	OPEN			CLOSED			4.5		4.5	14	18.5
11/28/89 16:40	V2-1C	CO2/02	110	S	541	110	S	516	3.3		6.4	11.8	18.2
11/28/89 16:44	V2-2A	CO2/02	OPEN			CLOSED			0.4		0.4	19.8	20.2
11/28/89 16:46	V2-2B	CO2/02	110	S	541	110	S	516	3.8		7.4	10.5	17.9
11/28/89 16:52	V2-2C	CO2/02	80	S	350	150	S	769	4.3		13.7	3.3	17.0
11/28/89 16:55	V2-3A	CO2/02	OPEN			CLOSED			1.4		1.4	18.2	19.6
11/28/89 16:58	V2-3B	CO2/02	110	S	541	110	S	516	3.3		6.4	12.5	18.9
11/28/89 17:01	V2-3C	CO2/02	110	S	541	110	S	516	4.7		9.2	9.2	18.4
11/28/89 17:10	Standard check with atmospheric air								0.09		0.1	20.6	
	Standard check with 5.1% CO2/N2								5		5.0	0.2	
	Respanned												
11/28/89 18:28	V1-1A	CO2/02	110	S	541	110	S	516	3.1		6.1	12.4	18.5
11/28/89 18:32	V1-1B	CO2/02	110	S	541	110	S	516	2.95		5.8	13.4	19.2

			CO2/THC DATA								O2 Data	
					Smpl			Dil.		Calc. Conc.	Gastech	
Date/Time	Sample		Smpl (Lt)		Flow	Dil. (Rt.)		Flow	Gastech-CO2 (%)	CO2 (%)	Reading	02+C02
m/d/y/ h:mm	Loc.	Anal.	Rotameter	G/S	cc/min	Rotameter	G/S	cc/min	SIP-THC (ppm)	THC (ppm)	O2 (%)	(%)
11/28/89 18:36	V1-1C	CO2/02	110	S	541	110	S	516	3.1	6.1	13	19.1
11/28/89 18:40	V1-2A	CO2/02	OPEN			CLOSED			4	4.0	13.6	17.6
11/28/89 18:43	V1-2B	CO2/02	OPEN			CLOSED			4.6	4.6	14.6	19.2
11/28/89 18:46	V1-2C	CO2/02	110	S	541	110	S	516	3.4	6.6	12.9	19.5
11/28/89 18:49	V1-3A	CO2/02	OPEN			CLOSED			3.2	3.2	15.8	19.0
11/28/89 18:51	V1-3B	CO2/02	OPEN			CLOSED			4.1	4.1	15.2	19.3
11/28/89 18:53	V1-3C	CO2/02	OPEN			CLOSED			5.1	5.1	14	19.1
11/28/89 18:55	V2-1A	CO2/02	OPEN			CLOSED			1.8	1.8	17	18.8
11/28/89 18:58	V2-1B	CO2/02	110	S	541	110	S	516	2.85	5.6	12.2	17.8
11/28/89 19:03	V2-1C	CO2/02	110	S	541	110	S	516	3.6	7.0	11.2	18.2
11/28/89 19:07	V2-2A	CO2/02	OPEN			CLOSED			0.65	0.7	18.5	19.2
11/28/89 19:09	V2-2B	CO2/02	110	S	541	110	S	516	4	7.8	9.8	17.6
11/28/89 19:13	V2-2C	CO2/02	80	S	350	150	S	769	4.2	13.4	3.9	17.3
11/28/89 19:19	V2-3A	CO2/02	OPEN			CLOSED			2	2.0	16.5	18.5
11/28/89 19:21	V2-3B	CO2/02	110	S	541	110	S	516	3.6	7.0	11.1	18.1
11/28/89 19:25	V2-3C	CO2/02	110	S	541	110	S	516	4.85	9.5	8.4	17.9
11/28/89 19:27	Standard check with atmospheric air								0.03	0.0	20.9	
11/28/89 21:05	V1-1A	CO2/02	110	S	541	110	S	516	3.15	6.2	11.3	17.5
11/28/89 21:09	V1-1B	CO2/02	110	S	541	110	S	516	3	5.9	13	18.9
11/28/89 21:15	V1-1C	CO2/02	110	S	541	110	S	516	3.1	6.1	13	19.1
11/28/89 21:19	V1-2A	CO2/02	OPEN			CLOSED			4.6	4.6	12	16.6
11/28/89 21:22	V1-2B	CO2/02	OPEN			CLOSED			4.8	4.8	14	18.8
11/28/89 21:26	V1-2C	CO2/02	110	S	541	110	S	516	3.4	6.6	12.9	19.5
11/28/89 21:30	V1-3A	CO2/02	OPEN			CLOSED			3.7	3.7	14.8	18.5
11/28/89 21:32	V1-3B	CO2/02	OPEN			CLOSED			4.4	4.4	14.8	19.2
11/28/89 21:34	V1-3C	CO2/02	110	S	541	110	S	516	2.9	5.7	13.7	19.4
11/28/89 21:38	V2-1A	CO2/02	OPEN			CLOSED			2.3	2.3	16	18.3
11/28/89 21:40	V2-1B	CO2/02	110	S	541	110	S	516	3.3	6.4	11.2	17.6
11/28/89 21:43	V2-1C	CO2/02	110	S	541	110	S	516	3.9	7.6	10.8	18.4
11/28/89 21:46	V2-2A	CO2/02	OPEN			CLOSED			1.1	1.1	17.6	18.7
11/28/89 21:48	V2-2B	CO2/02	110	S	541	110	S	516	4.15	8.1	10	18.1
11/28/89 21:52	V2-2C	CO2/02	80	S	350	150	S	769	4.3	13.7	5	18.7

			CO2/THC DATA								O2 Data	
					Smpl			Dil.		Calc. Conc.	Gastech	
Date/Time	Sample		Smpl (Lt)		Flc..	Dil. (Rt.)		Flow	Gastech-CO2 (%)	CO2 (%)	Reading	02+C02
m/d/y/ h:mm	Loc.	Anal.	Rotameter	G/S	cc/min	Rotameter	G/S	cc/min	SIP-THC (ppm)	THC (ppm)	O2 (%)	(%)
11/28/89 21:56	V2-3A	CO2/02	OPEN			CLOSED			2.6	2.6	15.4	18.0
11/28/89 21:58	V2-3B	CO2/02	110	S	541	110	S	516	3.9	7.6	10.6	18.2
11/28/89 22:03	V2-3C	CO2/02	110	S	541	110	S	516	4.9	9.6	8.2	17.8
11/28/89 22:09	Standard check with atmospheric air								0.03	0.0	20.9	
	Standard check with 5.1% CO2/N2								5.1	5.1	0	
11/29/89 1:22	Standard check with atmospheric air								0.03	0.0	20.9	
11/29/89 1:29	V1-1A	CO2/02	110	S	541	110	S	516	3.7	7.2	9.5	16.7
11/29/89 1:32	V1-1B	CO2/02	110	S	541	110	S	516	3.4	6.6	12	18.6
11/29/89 1:35	V1-1C	CO2/02	110	S	541	110	S	516	3.45	6.7	12.3	19.0
11/29/89 1:40	V1-2A	CO2/02	110	S	541	110	S	516	3	5.9	10.5	16.4
11/29/89 1:43	V1-2B	CO2/02	110	S	541	110	S	516	2.95	5.8	13	18.8
11/29/89 1:47	V1-2C	CO2/02	110	S	541	110	S	516	3.6	7.0	12.6	19.6
11/29/89 1:51	V1-3A	CO2/02	OPEN			CLOSED			4	4.0	14.2	18.2
11/29/89 1:54	V1-3B	CO2/02	OPEN			CLOSED			4.9	4.9	13.9	18.8
11/29/89 1:57	V1-3C	CO2/02	110	S	541	110	S	516	3.25	6.3	12.9	19.2
11/29/89 2:00	V2-1A	CO2/02	OPEN			CLOSED			3.1	3.1	13.5	16.6
11/29/89 2:03	V2-1B	CO2/02	110	S	541	110	S	516	3.9	7.6	9.2	16.8
11/29/89 2:06	V2-1C	CO2/02	110	S	541	110	S	516	4.2	8.2	9.2	17.4
11/29/89 2:09	V2-2A	CO2/02	OPEN			CLOSED			1.6	1.6	16	17.6
11/29/89 2:10	V2-2B	CO2/02	110	S	541	110	S	516	4.4	8.6	8.3	16.9
11/29/89 2:15	V2-2C	CO2/02	76	S	322	150	S	769	4.3	14.6	4.5	19.1
11/29/89 2:20	V2-3A	CO2/02	OPEN			CLOSED			3.4	3.4	13.2	16.6
11/29/89 2:25	V2-3B	CO2/02	80	S	350	110	S	516	3.5	8.7	8.2	16.9
11/29/89 2:28	V2-3C	CO2/02	80	S	350	110	S	516	4.3	10.6	6.2	16.8
11/29/89 2:32	Standard check with atmospheric air								0.03	0.0	20.9	
	Standard check with 5.1% CO2/N2								5.1	5.1	0	
11/29/89 7:00	Standard check with atmospheric air								0.03	0.0	20.9	
	Standard check with 5.1% CO2/N2								5.1	5.1	0	
11/29/89 7:10	V1-1A	CO2/02	110	S	541	110	S	516	4.1	8.0	7.8	15.8
11/29/89 7:13	V1-1B	CO2/02	110	S	541	110	S	516	3.7	7.2	10.8	18.0
11/29/89 7:16	V1-1C	CO2/02	110	S	541	110	S	516	3.6	7.0	11.1	18.1
11/29/89 7:20	V1-2A	CO2/02	110	S	541	110	S	516	3.5	6.8	9	15.8

			CO2/THC DATA								O2 Data	
					Smpl			Dil.		Calc. Conc.	Gastech	
Date/Time	Sample		Smpl (Lt)		Flow	Dil. (Rt.)		Flow	Gastech-CO2 (%)	CO2 (%)	Reading	02+C02
m/d/y/ h:mm	Loc.	Anal.	Rotameter	G/S	cc/min	Rotameter	G/S	cc/min	SIP-THC (ppm)	THC (ppm)	O2 (%)	(%)
11/29/89 7:25	V1-2B	CO2/02	110	S	541	110	S	516	3.3	6.4	11.5	17.9
11/29/89 7:27	V1-2C	CO2/02	110	S	541	110	S	516	3.7	7.2	11.5	18.7
11/29/89 7:31	V1-3A	CO2/02	OPEN			CLOSED			4.1	4.1	14.2	18.3
11/29/89 7:35	V1-3B	CO2/02	110	S	541	110	S	516	2.9	5.7	12.5	18.2
11/29/89 7:38	V1-3C	CO2/02	110	S	541	110	S	516	3.6	7.0	11.1	18.1
11/29/89 7:41	V2-1A	CO2/02	110	S	541	110	S	516	2.2	4.3	10.5	14.8
11/29/89 7:45	V2-1B	CO2/02	110	S	541	110	S	516	4.4	8.6	7	15.6
11/29/89 7:48	V2-1C	CO2/02	110	S	541	110	S	516	4.5	8.8	7.3	16.1
11/29/89 7:51	V2-2A	CO2/02	OPEN			CLOSED			2	2.0	14.3	16.3
11/29/89 7:54	V2-2B	CO2/02	110	S	541	110	S	516	4.6	9.0	6.2	15.2
11/29/89 7:57	V2-2C	CO2/02	80	S	350	150	S	769	4.2	13.4	3.1	16.5
11/29/89 7:59	V2-3A	CO2/02	OPEN			CLOSED			4	4	11.5	15.5
11/29/89 8:03	V2-3B	CO2/02	110	S	541	110	S	516	4.75	9.3	6	15.3
11/29/89 8:07	V2-3C	CO2/02	80	S	350	150	S	769	3.8	12.1	3.8	15.9
11/29/89 8:10	Standard check with atmospheric air								0	0.0	20.8	
11/29/89 12:26	Standard check with atmospheric air								0.03	0.0	20.9	
	Standard check with 5.1% CO2/N2								5.1	5.1	0	
11/29/89 12:34	V1-1A	CO2/02	110	S	541	110	S	516	4.3	8.4	7	15.4
11/29/89 12:37	V1-1B	CO2/02	110	S	541	110	S	516	3.8	7.4	9.5	16.9
11/29/89 12:40	V1-1C	CO2/02	110	S	541	110	S	516	3.8	7.4	10	17.4
11/29/89 12:43	V1-2A	CO2/02	110	S	541	110	S	516	3.8	7.4	7.7	15.1
11/29/89 12:45	V1-2B	CO2/02	110	S	541	110	S	516	3.55	6.9	10	16.9
11/29/89 12:48	V1-2C	CO2/02	110	S	541	110	S	516	3.9	7.6	10.1	17.7
11/29/89 12:52	V1-3A	CO2/02	OPEN			CLOSED			4.1	4.1	13.5	17.6
11/29/89 12:55	V1-3B	CO2/02	110	S	541	110	S	516	3.6	7.0	10.4	17.4
11/29/89 12:58	V1-3C	CO2/02	110	S	541	110	S	516	4	7.8	9.2	17.0
11/29/89 13:03	V2-1A	CO2/02	110	S	541	110	S	516	2.8	5.5	8.2	13.7
11/29/89 13:05	V2-1B	CO2/02	110	S	541	110	S	516	4.9	9.6	4.2	13.8
11/29/89 13:10	V2-1C	CO2/02	110	S	541	110	S	516	4.8	9.4	4.8	14.2
11/29/89 13:13	V2-2A	CO2/02	OPEN			CLOSED			2.5	2.5	12.8	15.3
11/29/89 13:16	V2-2B	CO2/02	110	S	541	110	S	516	5	9.8	4.8	14.6
11/29/89 13:19	V2-2C	CO2/02	80	S	350	150	S	769	4.35	13.9	1.5	15.4

			CO2/THC DATA								O2 Data	
					Smpl			Dil.		Calc. Conc.	Gastech	
Date/Time	Sample		Smpl (Lt)		Flow	Dil. (Rt.)		Flow	Gastech-CO2 (%)	CO2 (%)	Reading	02+C02
m/d/y/ h:mm	Loc.	Anal.	Rotameter	G/S	cc/min	Rotameter	G/S	cc/min	SIP-THC (ppm)	THC (ppm)	O2 (%)	(%)
11/29/89 13:21	V2-3A	CO2/02	OPEN			CLOSED			4.6	4.6	11	15.6
11/29/89 13:24	V2-3B	CO2/02	80	S	350	150	S	769	3.6	11.5	3.5	15.0
11/29/89 13:26	V2-3C	CO2/02	80	S	350	150	S	769	4.2	13.4	1.2	14.6
11/29/89 13:32	V3A	CO2/02	OPEN			CLOSED			1.6	1.6	18.9	20.5
11/29/89 13:36	V3B	CO2/02	OPEN			CLOSED			1.8	1.8	18.5	20.3
11/29/89 13:39	V3C	CO2/02	OPEN			CLOSED			1.9	1.9	18.5	20.4
11/29/89 13:41	V4A	CO2/02	OPEN			CLOSED			0.8	0.8	19.8	20.6
11/29/89 13:43	V4B	CO2/02	OPEN			CLOSED			0.85	0.9	19.7	20.6
11/29/89 13:44	V4C	CO2/02	OPEN			CLOSED			0.9	0.9	19.7	20.6
11/29/89 13:45	Standard check with atmospheric air								0.03	0.0	20.9	
11/29/89 19:20	Standard check with atmospheric air								0.03	0.0	20.9	
	Standard check with 5.1% CO2/N2								5.1	5.1	0	
11/29/89 19:26	V1-1A	CO2/02	110	S	541	110	S	516	4.8	9.4	5.8	15.2
11/29/89 19:30	V1-1B	CO2/02	110	S	541	110	S	516	4.4	8.6	8	16.6
11/29/89 19:33	V1-1C	CO2/02	110	S	541	110	S	516	4.3	8.4	8.5	16.9
11/29/89 19:36	V1-2A	CO2/02	110	S	541	110	S	516	4.3	8.4	6.7	15.1
11/29/89 19:39	V1-2B	CO2/02	110	S	541	110	S	516	4.1	8.0	8.4	16.4
11/29/89 19:42	V1-2C	CO2/02	110	S	541	110	S	516	4.3	8.4	9	17.4
11/29/89 19:45	V1-3A	CO2/02	OPEN			CLOSED			4.85	4.9	12	16.9
11/29/89 19:48	V1-3B	CO2/02	110	S	541	110	S	516	4	7.8	9	16.8
11/29/89 19:52	V1-3C	CO2/02	110	S	541	110	S	516	4.4	8.6	7.8	16.4
11/29/89 19:55	V2-1A	CO2/02	110	S	541	110	S	516	3.35	6.5	9.5	16.0
11/29/89 19:58	V2-1B	CO2/02	80	S	350	150	S	769	3.65	11.7	2.8	14.5
11/29/89 20:02	V2-1C	CO2/02	80	S	350	150	S	769	3.7	11.8	3.2	15.0
11/29/89 20:06	V2-2A	CO2/02	OPEN			CLOSED			3.1	3.1	11.5	14.6
11/29/89 20:09	V2-2B	CO2/02	80	S	350	150	S	769	3.7	11.8	3.9	15.7
11/29/89 20:12	V2-2C	CO2/02	80	S	350	150	S	769	4.4	14.1	1	15.1
11/29/89 20:15	V2-3A	CO2/02	110	S	541	110	S	516	2.9	5.7	9.4	15.1
11/29/89 20:23	V2-3B	CO2/02	80	S	350	150	S	769	4	12.8	2.3	15.1
11/29/89 20:29	V2-3C	CO2/02	80	S	350	150	S	769	4.5	14.4	0.5	14.9
11/29/89 20:33	Standard check with atmospheric air								0.03	0.0	20.9	

			CO2/THC DATA								O2 Data	
Date/Time	Sample		Smpl (Lt)		Smpl Flow	Dil. (Rt.)		Dil. Flow	Gastech-CO2 (%)	Calc. Conc. CO2 (%)	Gastech Reading	02+C02
m/d/y/ h:mm	Loc.	Anal.	Rotameter	G/S	cc/min	Rotameter	G/S	cc/min	SIP-THC (ppm)	THC (ppm)	O2 (%)	(%)
11/30/89 6:47	Standard check with atmospheric air								0.03	0.0	20.9	
	Standard check with 5.1% CO2/N2								5.1	5.1	0	
11/30/89 6:58	V1-1A	CO2/02	110	S	541	110	S	516	5	9.8	4.2	14.0
11/30/89 7:01	V1-1B	CO2/02	110	S	541	110	S	516	4.8	9.4	5.5	14.9
11/30/89 7:04	V1-1C	CO2/02	110	S	541	110	S	516	4.7	9.2	6	15.2
11/30/89 7:08	V1-2A	CO2/02	110	S	541	110	S	516	4.7	9.2	5.2	14.4
11/30/89 7:11	V1-2B	CO2/02	110	S	541	110	S	516	4.6	9.0	6	15.0
11/30/89 7:14	V1-2C	CO2/02	110	S	541	110	S	516	4.8	9.4	5.8	15.2
11/30/89 7:17	V1-3A	CO2/02	110	S	541	110	S	516	2.9	5.7	10	15.7
11/30/89 7:22	V1-3B	CO2/02	110	S	541	110	S	516	4.7	9.2	6.1	15.3
11/30/89 7:25	V1-3C	CO2/02	110	S	541	110	S	516	5	9.8	4.9	14.7
11/30/89 7:29	V2-1A	CO2/02	110	S	541	110	S	516	3.3	6.4	7.8	14.2
11/30/89 7:35	V2-1B	CO2/02	80	S	350	150	S	769	3.85	12.3	1.3	13.6
11/30/89 7:42	V2-1C	CO2/02	80	S	350	150	S	769	3.9	12.5	1	13.5
11/30/89 7:47	V2-2A	CO2/02	OPEN			CLOSED			3.95	4.0	9	13.0
11/30/89 7:50	V2-2B	CO2/02	80	S	350	150	S	769	3.9	12.5	1.3	13.8
11/30/89 7:53	V2-2C	CO2/02	80	S	350	150	S	769	4.2	13.4	0.5	13.9
11/30/89 7:57	V2-3A	CO2/02	110	S	541	110	S	516	3.6	7.0	6	13.0
11/30/89 8:01	V2-3B	CO2/02	80	S	350	150	S	769	4.1	13.1	1	14.1
11/30/89 8:08	V2-3C	CO2/02	80	S	350	150	S	769	4.4	14.1	0.3	14.4
11/30/89 8:16	Standard check with atmospheric air								0.01	0.0	20.3	
	Standard check with 5.1% CO2/N2								5.1	5.1	0.1	
11/30/89 16:22	Standard check with atmospheric air								0.03	0.0	20.9	
	Standard check with 5.1% CO2/N2								5.1	5.1	0	
11/30/89 16:27	V1-1A	CO2/02	80	S	350	150	S	769	3.45	11.0	3.4	14.4
11/30/89 16:31	V1-1B	CO2/02	80	S	350	150	S	769	3.4	10.9	4.1	15.0
11/30/89 16:34	V1-1C	CO2/02	80	S	350	150	S	769	3.45	11.0	4.5	15.5
11/30/89 16:37	V1-2A	CO2/02	80	S	350	150	S	769	3.4	10.9	3.5	14.4
11/30/89 16:42	V1-2B	CO2/02	80	S	350	150	S	769	3.4	10.9	4.2	15.1
11/30/89 16:44	V1-2C	CO2/02	80	S	350	150	S	769	3.5	11.2	4.1	15.3
11/30/89 16:47	V1-3A	CO2/02	110	S	541	110	S	516	3.7	7.2	7.8	15.0
11/30/89 16:52	V1-3B	CO2/02	110	S	541	110	S	516	5.1	10.0	4.6	14.6

				CO2/THC DATA							O2 Data	
					Smpl			Dil.		Calc. Conc.	Gastech	
Date/Time	Sample		Smpl (Lt)		Flow	Dil. (Rt.)		Flow	Gastech-CO2 (%)	CO2 (%)	Reading	02+C02
m/d/y/ h:mm	Loc.	Anal.	Rotameter	G/S	cc/min	Rotameter	G/S	cc/min	SIP-THC (ppm)	THC (ppm)	O2 (%)	(%)
11/30/89 16:55	V1-3C	CO2/02	80	S	350	150	S	769	3.9	12.5	3.3	15.8
11/30/89 16:59	V2-1A	CO2/02	110	S	541	110	S	516	4.25	8.3	6.7	15.0
11/30/89 17:06	V2-2A	CO2/02	110	S	541	110	S	516	2.85	5.6	6.8	12.4
11/30/89 17:08	V2-3A	CO2/02	110	S	541	110	S	516	4.6	9.0	5	14.0
11/30/89 17:14	V4A	CO2/02	OPEN			CLOSED			0.9	0.9	19.8	20.7
11/30/89 17:16	V4B	CO2/02	OPEN			CLOSED			0.9	0.9	19.8	20.7
11/30/89 17:17	V4C	CO2/02	OPEN			CLOSED			1	1.0	19.7	20.7
11/30/89 17:19	Standard check with atmospheric air								0.03	0.0	20.9	
12/1/89 8:30	Standard check with atmospheric air								0.03	0.0	20.9	
	Standard check with 5.1% CO2/N2								5.1	5.1	0.1	
12/1/89 8:23	V1-1A	CO2/02	80	S	350	150	S	769	4	12.8	1	13.8
12/1/89 8:27	V1-1B	CO2/02	80	S	350	150	S	769	3.8	12.1	1.6	13.7
12/1/89 8:34	V1-1C	CO2/02	80	S	350	150	S	769	3.8	12.1	2.3	14.4
12/1/89 8:36	V1-2A	CO2/02	80	S	350	150	S	769	3.8	12.1	1.8	13.9
12/1/89 8:40	V1-2B	CO2/02	80	S	350	150	S	769	3.9	12.5	1.8	14.3
12/1/89 8:42	V1-2C	CO2/02	80	S	350	150	S	769	3.9	12.5	1.8	14.3
12/1/89 8:47	V1-3A	CO2/02	110	S	541	110	S	516	4.55	8.9	5	13.9
12/1/89 8:52	V1-3B	CO2/02	80	S	350	150	S	769	4.1	13.1	2.6	15.7
12/1/89 8:55	V1-3C	CO2/02	80	S	350	150	S	769	4.4	14.1	1.3	15.4
12/1/89 9:00	V2-1A	CO2/02	110	S	541	110	S	516	4.3	8.4	6.2	14.6
12/1/89 9:16	V2-2A	CO2/02	110	S	541	110	S	516	3.8	7.4	5.5	12.9
12/1/89 9:19	V2-3A	CO2/02	110	S	541	110	S	516	5	9.8	4.5	14.3
12/1/89 9:25	V4A	CO2/02	OPEN			CLOSED			0.9	0.9	19.8	20.7
12/1/89 9:27	V4B	CO2/02	OPEN			CLOSED			0.9	0.9	19.8	20.7
12/1/89 9:29	V4C	CO2/02	OPEN			CLOSED			1	1.0	19.7	20.7
12/1/89 9:35	Standard check with atmospheric air								0.05	0.1	20.9	
	Standard check with 5.1% CO2/N2								5.1	5.1	0	
12/1/89 14:00	Blowers started											
12/2/89 8:14	Standard check with atmospheric air								0.03	0.0	20.9	
	Standard check with 5.1% CO2/N2								5.1	5.1	0	
12/2/89 8:30	V1-1A	O2									1.5	

				CO2/THC DATA							O2 Data	
					Smpl			Dil.		Calc. Conc.	Gastech	
Date/Time	Sample		Smpl (Lt)		Flow	Dil. (Rt.)		Flow	Gastech-CO2 (%)	CO2 (%)	Reading	02+C02
m/d/y/ h:mm	Loc.	Anal.	Rotameter	G/S	cc/min	Rotameter	G/S	cc/min	SIP-THC (ppm)	THC (ppm)	O2 (%)	(%)
12/2/89 8:31	V1-1B	O2	Note: Low O2 levels in V1 resulted from no flow due to the valve on the water trap be								1.5	
12/2/89 8:32	V1-1C	O2	Turned flow up to approx. 12 lpm for six hours(1500).								1	
12/2/89 8:33	V1-2A	O2	O2 at this time averaged approx. 10%. Flow turned down to 4.2 lpm at 1500hrs.								1.5	
12/2/89 8:34	V1-2B	O2									2	
12/2/89 8:35	V1-2C	O2									2	
12/2/89 9:10	V2-1A	O2									19	
12/2/89 9:11	V2-1B	O2									13	
12/2/89 9:12	V2-1C	O2									8	
12/2/89 9:13	V2-2A	O2									20.5	
12/2/89 9:14	V2-2B	O2									10	
12/2/89 9:15	V2-2C	O2									2.8	
12/2/89 9:16	V2-3A	O2									19.5	
12/2/89 9:17	V2-3B	O2									11.5	
12/2/89 9:18	V2-3C	O2									6	
12/2/89 15:50	Standard check with atmospheric air								0.03	0.0	20.9	
	Standard check with 5.1% CO2/N2								5.1	5.1	0	
	Standard check with 1005 ppm std. GC Counts = 156								1005	1005.0		
12/2/89 16:02	V4 disch	CO2/02	OPEN			CLOSED			0.7	0.7	20.2	20.9
		THC	OPEN			CLOSED			2	2.0		
12/2/89 16:19	Background through pump and lines = 38 ppm											
12/2/89 17:30	V3 disch	CO2/02	OPEN			CLOSED			2.2	2.2	16.5	18.7
		THC	OPEN			CLOSED			264	264.0		
12/2/89 16:46	V3 inlet	CO2/02	110	S	541	110	S	516	4.7	9.2	9.6	18.8
		THC	80	S	350	150	S	769	800	2557.7		
12/2/89 17:46	V2 disch	CO2/02	110	S	541	110	S	516	3.5	6.8	13	19.8
		THC	110	G	203	150	S	769	865	4141.8		
12/2/89 17:58	V1 disch	CO2/02	110	S	541	110	S	516	4.7	9.2	10	19.2
		THC	80	S	350	150	S	769	1060	3389.0		
12/2/89 18:05	Standard check with atmospheric air								0.03	0.0	20.9	
	Standard check with 5.1% CO2/N2								5.1	5.1	0.2	
	Standard check with 1005 ppm std.								1000	1000.0		

			CO2/THC DATA								O2 Data	
					Smpl			Dil.		Calc. Conc.	Gastech	
Date/Time	Sample		Smpl (Lt)		Flow	Dil. (Rt.)		Flow	Gastech-CO2 (%)	CO2 (%)	Reading	02+C02
m/d/y/ h:mm	Loc.	Anal.	Rotameter	G/S	cc/min	Rotameter	G/S	cc/min	SIP-THC (ppm)	THC (ppm)	O2 (%)	(%)
12/5/89 12:00	Standard check with atmospheric air								0	0.0	21	
	Standard check with 5.1% CO2/N2								5.1	5.1	0	
	Standard check with 1005 ppm std.								1005	1005.0		
12/5/89 12:00	V4 disch	CO2/02	OPEN			CLOSED			0.6	0.6	20.2	
		THC	OPEN			CLOSED			4	4.0		
12/5/89 12:00	V3 disch	CO2/02	OPEN			CLOSED			3.5	3.5	16	19.5
		THC	145	S	752	145	S	739	1020	2022.4		
12/5/89 12:00	V3 inlet	CO2/02	OPEN			CLOSED			0.5	0.5	20.2	20.7
		THC	150	S	777	150	S	769	330	656.6		
			Note: Must be an error in V3 inlet reading. Use data from V1 discharge.									
12/5/89 12:00	V2 disch	CO2/02	OPEN			CLOSED			5	5.0	14	19.0
		THC	50	S	169	150	S	769	840	4662.2		
12/5/89 12:00	V1 disch	CO2/02	OPEN			CLOSED			5.2	5.2	14	19.2
		THC	Water in rotameter - no readings									
12/7/89 12:00	V4 disch	CO2/02	OPEN			CLOSED			0.7	0.7	20.2	20.9
		THC	OPEN			CLOSED			ND	ND		
12/7/89 12:00	V3 disch	CO2/02	OPEN			CLOSED			2.6	2.6	17.5	20.1
		THC	100	S	458	100	S	445	740	1459.0		
12/7/89 12:00	V3 inlet	CO2/02	100	S	458	100	S	445	2.9	5.7	13.5	19.2
		THC	50	S	169	50	S	171	790	1589.3		
12/7/89 12:00	V3 inlet	CO2/02	OPEN			CLOSED			5	5.0	14.7	19.7
		THC	70	S	290	110	S	516	840	2334.6		
			NOTE: Differences in THC occured because rotameter readings of 50S/50S do not provide adequate air									
			and fresh air was drawn in.									
12/7/89 12:00	V2 disch	CO2/02	OPEN			CLOSED			4.9	4.9	15	19.9
		THC	80	S	350	150	S	769	1100	3516.9		
12/7/89 12:00	V1 disch	CO2/02	OPEN			CLOSED			4.4	4.4	15.8	20.2
		THC	100	S	458	150	S	769	1090	2920.2		

			CO2/THC DATA								O2 Data	
					Smpl			Dil.		Calc. Conc.	Gastech	
Date/Time	Sample		Smpl (Lt)		Flow	Dil. (Rt.)		Flow	Gastech-CO2 (%)	CO2 (%)	Reading	02+C02
m/d/y/ h:mm	Loc.	Anal.	Rotameter	G/S	cc/min	Rotameter	G/S	cc/min	SIP-THC (ppm)	THC (ppm)	O2 (%)	(%)
12/11/89 12:00	Standard check with atmospheric air											
12/11/89 12:00	Standard check with 5.1% CO2/N2											
12/11/89 12:00	Standard check with 1005 ppm std. GC counts = 175								1005	1005.0		
12/11/89 12:00	V4 disch	CO2/02	OPEN			CLOSED			0.5	0.5	20	20.5
		THC	OPEN			CLOSED			ND	ND		
12/11/89 12:00	V3 disch	CO2/02	OPEN			CLOSED			4.5	4.5	15.5	20.0
		THC	130	S	648	130	S	635	670	1326.6		
12/11/89 12:00	V3 inlet	CO2/02	OPEN			CLOSED			4.5	4.5	15.5	20.0
		THC	100	S	458	150	S	769	950	2545.1		
12/11/89 12:00	V2 disch	CO2/02	OPEN			CLOSED			3.4	3.4	16.7	20.1
		THC	100	S	458	150	S	769	1080	2893.4		
12/11/89 12:00	V1 disch	CO2/02	OPEN			CLOSED			4.5	4.5	15.5	20.0
		THC	100	S	458	150	S	769	860	2304.0		
	Note: Fixed V2 nutrient concentrate (was off 4-11 Dec). Fixed sticking V1 rotameter. Set at 7.75.											

			CO2/THC DATA								O2 Data	
					Smpl			Dil.		Calc. Conc.	Gastech	
Date/Time	Sample		Smpl (Lt)		Flow	Dil. (Rt.)		Flow	Gastech-CO2 (%)	CO2 (%)	Reading	02+C02
m/d/y/ h:mm	Loc.	Anal.	Rotameter	G/S	cc/min	Rotameter	G/S	cc/min	SIP-THC (ppm)	THC (ppm)	O2 (%)	(%)
12/13/89 14:30	Standard check with atmospheric air											
12/13/89 14:30	Standard check with 5.1% CO2/N2											
12/13/89 14:30	Standard check with 1005 ppm std. GC counts = 165								1005	1005.0		
12/13/89 14:30	V4 disch	CO2/02	OPEN			CLOSED			0.45	0.5	20.5	21.0
		THC	OPEN			CLOSED			2	2.0		
12/13/89 14:30	V3 disch	CO2/02	DIRECT						2.8	2.8	17.5	20.3
		THC	OPEN			CLOSED			595	595.0		
12/13/89 14:30	V3 inlet	CO2/02	DIRECT						4.4	4.4	16	20.4
12/13/89 14:30	V3 inlet	CO2/02	OPEN			CLOSED			3.2	3.2	17.1	20.3
		THC	130	S	648	130	S	635	1100	2177.9		
12/13/89 14:30	V2 disch	CO2/02	DIRECT						2.9	2.9	17.1	20.0
12/13/89 14:30	V2 disch	CO2/02	OPEN			CLOSED			2.5	2.5	18	20.5
		THC	100	S	458	150	S	769	1050	2813.0		
12/13/89 14:30	V1 disch	CO2/02	DIRECT						4.4	4.4	15.8	20.2
12/13/89 14:30	V1 disch	CO2/02	OPEN			CLOSED			3.7	3.7	16.6	20.3
		THC	100	S	458	150	S	769	785	2103.0		
			Decresed V3 discharge to 3.1 lpm (rotameter 40) and increased water flow to V3 to raise water table									
			Water below boards approx. 6 inches.									
12/15/89 11:30	Standard check with atmospheric air											
12/15/89 11:30	Standard check with 5.1% CO2/N2											
12/15/89 11:30	Standard check with 1005 ppm std. reads 1020 ppm.											
12/15/89 11:30	V4 disch	CO2/02	OPEN			CLOSED			0.42	0.4	20.2	20.6
		THC	OPEN			CLOSED			ND	ND		
12/15/89 11:30	V3 disch	CO2/02	DIRECT						4.5	4.5	15.1	19.6
	V3 disch	CO2/02	OPEN			CLOSED			3.4	3.4	16.8	20.2
		THC	100	S	458	100	S	445	580	1143.5		
12/15/89 11:30	V3 inlet	CO2/02	DIRECT						4.5	4.5	14.5	19.0
12/15/89 11:30	V3 inlet	CO2/02	OPEN			CLOSED			3	3.0	16.6	19.6
		THC	100	S	458	150	S	769	650	1741.4		
			Note: V3 water level at 5.25'. 5.4' is bottom of boards.									

				CO2/THC DATA								O2 Data	
					Smpl			Dil.			Calc. Conc.	Gastech	
Date/Time	Sample		Smpl (Lt)		Flow	Dil. (Rt.)		Flow	Gastech-CO2 (%)		CO2 (%)	Reading	02+C02
m/d/y/ h:mm	Loc.	Anal.	Rotameter	G/S	cc/min	Rotameter	G/S	cc/min	SIP-THC (ppm)		THC (ppm)	O2 (%)	(%)
12/15/89 11:30	V2 disch	CO2/02	DIRECT						3.3		3.3	17.3	20.6
12/15/89 11:30	V2 disch	CO2/02	OPEN			CLOSED			2.7		2.7	18	20.7
		THC	100	S	458	100	S	445	1060		2089.9		
12/15/89 11:30	V1 disch	CO2/02	DIRECT						4.5		4.5	16	20.5
12/15/89 11:30	V1 disch	CO2/02	OPEN			CLOSED			3.7		3.7	17	20.7
		THC	100	S	458	150	S	769	765		2049.5		
12/15/89 11:30	dewater	CO2/02	DIRECT						0.8		0.8	20	20.8
		THC	150	S	777	80	S	337	300		430.1		
			NOTE: Direct and sample train readings taken 13, 15 December indicate a leak in the sample train.										
			If leak is through the dilution rotameter then THC is unaffected.										
			If leak is on the sample line then THC concentrations have received additional dilution. Doug will investigate.										
			During the shutdown test on 30 Nov. O2 levels as low as 0.3% were measured indicating no significant leaks.										
			On 3 Jan 1990 prior to shutdown test No. 3 the source of the leak was identified as the sampling pump.										
			Therefore, from 13 Dec to 2 Jan direct CO2/O2 readings will be used and THC adjusted 10% higher.										
12/20/89 12:00	V4 disch	CO2/02	OPEN			CLOSED			0.35		0.4	20.5	20.9
		THC	OPEN			CLOSED			ND		ND		
12/20/89 12:00	V3 disch	CO2/02	Inoperative from 16-19 Dec because valve was										
		THC	closed accidently. Flooded today.										
12/20/89 12:00	V3 inlet	CO2/02	"										
		THC											
12/20/89 12:00	V2 disch	CO2/02	DIRECT						3.1		3.1	17.2	20.3
		THC	DIRECT						3000		3000.0		
12/20/89 12:00	V1 disch	CO2/02	DIRECT						4.1		4.1	16.5	20.6
		THC							2700		2700.0		
			Note : Direct readings of THC in the 3000 ppm range when calibrated at 1005 ppm are probably										
			30 % high due to nonlinearity of the instrument above 1500 ppm. Disregard.										
12/22/89 12:00	V4 disch	CO2/02	DIRECT						0.22		0.2	21	21.2
		THC	OPEN			CLOSED			ND		ND		
12/22/89 12:00	V3 disch	CO2/02	DIRECT						2.6		2.6	17.5	20.1
		THC	100	S	458	100	S	445	580		1143.5		

				CO2/THC DATA								O2 Data	
					Smpl			Dil.		Calc. Conc.	Gastech	
Date/Time	Sample		Smpl (Lt)		Flow	Dil. (Rt.)		Flow	Gastech-CO2 (%)	CO2 (%)	Reading	02+C02
m/d/y/ h:mm	Loc.	Anal.	Rotameter	G/S	cc/min	Rotameter	G/S	cc/min	SIP-THC (ppm)	THC (ppm)	O2 (%)	(%)
12/22/89 12:00	V3 inlet	CO2/02	DIRECT						3.4	3.4	17	20.4
		THC	100	S	458	150	S	769	650	1741.4		
12/22/89 12:00	V2 disch	CO2/02	DIRECT						2.6	2.6	16.8	19.4
		THC	100	S	458	100	S	445	1060	2089.9		
12/22/89 12:00	V1 disch	CO2/02	DIRECT						3.4	3.4	16.5	19.9
		THC	100	S	458	150	S	769	765	2049.5		
			Note: THC numbers provided by telephone are not in the hard copy.									
12/27/89 12:00	Standard check with atmospheric air											
12/27/89 12:00	Standard check with 5.1% CO2/N2											
12/27/89 12:00	Standard check with 1005 ppm std. reads 1020 ppm. GC counts = 167											
12/27/89 12:00	V4 disch	CO2/02	DIRECT						0.4	0.4	20.8	21.2
		THC	DIRECT						ND	ND		
12/27/89 12:00	V3 disch	CO2/02	DIRECT						1.8	1.8	18.8	20.6
		THC	DIRECT						370	370.0		
12/27/89 12:00	V3 inlet	CO2/02	DIRECT						1.9	1.9	18.8	20.7
		THC	100	S	458	100	S	445	710	1399.8		
12/27/89 12:00	V2 disch	CO2/02	DIRECT						2.6	2.6	17.9	20.5
		THC	100	S	458	100	S	445	1150	2267.4		
12/27/89 12:00	V1 disch	CO2/02	DIRECT						2.9	2.9	17.7	20.6
		THC	100	S	458	100	S	445	760	1498.4		
	Note: Mixed 70 gal of Nutrient solution on 26 Dec and set V3and V4 at 3 ml/min continuous.											
	Water and nutrient turned off 24-25 Dec due to freeze. Air flow unaffected.											
12/29/89 12:00	Standard check with atmospheric air											
12/29/89 12:00	Standard check with 5.1% CO2/N2											
12/29/89 12:00	Standard check with 1005 ppm std. GC counts = 170											
12/29/89 12:00	V4 disch	CO2/02	DIRECT						0.5	0.5	20	20.5
		THC	DIRECT						ND	ND		
12/29/89 12:00	V3 disch	CO2/02	DIRECT						1.5	1.5	19	20.5
		THC	DIRECT						370	370.0		
12/29/89 12:00	V3 inlet	CO2/02	DIRECT						1.3	1.3	19.4	20.7
		THC	DIRECT						530	530.0		

				CO2/THC DATA								O2 Data	
					Smpl			Dil.			Calc. Conc.	Gastech	
Date/Time	Sample		Smpl (Lt)		Flow	Dil. (Rt.)		Flow	Gastech-CO2 (%)		CO2 (%)	Reading	02+C02
m/d/y/ h:mm	Loc.	Anal.	Rotameter	G/S	cc/min	Rotameter	G/S	cc/min	SIP-THC (ppm)		THC (ppm)	O2 (%)	(%)
12/29/89 12:00	V2 disch	CO2/02	DIRECT						2.3		2.3	17.7	20.0
		THC	100	S	458	100	S	445	770		1518.1		
12/29/89 12:00	V1 disch	CO2/02	DIRECT						2.8		2.8	17.5	20.3
		THC	100	S	458	100	S	445	600		1183.0		
	Note: a leak in the V1 to V3 line was suspected due to the low reading.												
	Bypassing in the building eliminated the problem and V3 inlet readings same (± .2) as V1 discharge.												
	Readings on 27 Dec were OK so apparently a short term problem.												
1/2/90 12:00	Standard check with atmospheric air												
1/2/90 12:00	Standard check with 5.1% CO2/N2												
1/2/90 12:00	Standard check with 1005 ppm std. GC counts = 159												
1/2/90 12:00	V4 disch	CO2/02	DIRECT						0.45		0.5	20.2	20.7
		THC	DIRECT						ND		ND		
1/2/90 12:00	V3 disch	CO2/02	DIRECT						2.9		2.9	17.5	20.4
		THC	DIRECT						610		610.0		
1/2/90 12:00	V3 inlet	CO2/02	DIRECT						3		3.0	17.3	20.3
		THC	DIRECT						1450		1450.0		
1/2/90 12:00	V2 disch	CO2/02	DIRECT						1.9		1.9	18.2	20.1
		THC	DIRECT						1600		1600.0		
1/2/90 12:00	V1 disch	CO2/02	DIRECT						2.6		2.6	17.3	19.9
		THC	DIRECT						1500		1500.0		
1/3/90 10:30	Standard check with atmospheric air										0.0	20.9	
1/3/90 10:30	Standard check with 20.1% CO2/N2										20.0	0	
	Note: Using new CO2/O2 meter with full scale CO2/O2 capability. No dilution required.												
	Spanning to 20.1% CO2 standard the 5.12% standard reads 5.4%.												
1/3/90 11:41	Standard check with 1005 ppm std. GC counts = 137												
	The leak discussed above was traced to the sampling pump. Using different pump and original sampling train												
	for the following:												
1/3/90 11:45	V1-1A	CO2/02	OPEN			CLOSED			3.8		3.8	16.5	20.3
		THC	110	S	541	150	S	769	800		1937.2		
1/3/90 11:51	V1-1B	CO2/02	OPEN			CLOSED			3.4		3.4	17.1	20.5
		THC	80	S	350	150	S	769	980		3133.2		

				CO2/THC DATA							O2 Data	
					Smpl			Dil.		Calc. Conc.	Gastech	
Date/Time	Sample		Smpl (Lt)		Flow	Dil. (Rt.)		Flow	Gastech-CO2 (%)	CO2 (%)	Reading	02+C02
m/d/y/ h:mm	Loc.	Anal.	Rotameter	G/S	cc/min	Rotameter	G/S	cc/min	SIP-THC (ppm)	THC (ppm)	O2 (%)	(%)
1/3/90 11:56	V1-1C	CO2/02	OPEN			CLOSED			3.2	3.2	17.2	20.4
		THC	110	S	541	110	S	516	960	1875.6		
1/3/90 12:01	V1-2A	CO2/02	OPEN			CLOSED			2	2	18.2	20.2
		THC	OPEN			CLOSED			595	595		
1/3/90 12:05	V1-2B	CO2/02	OPEN			CLOSED			2.75	2.75	17.8	20.6
		THC	OPEN			CLOSED			1070	1070		
1/3/90 12:13	V1-2C	CO2/02	OPEN			CLOSED			3.8	3.8	16.5	20.3
		THC	110	S	541	110	S	516	630	1230.9		
1/3/90 12:18	V1-3A	CO2/02	OPEN			CLOSED			0.6	0.6	20.2	20.8
		THC	OPEN			CLOSED			80	80		
1/3/90 12:22	V1-3B	CO2/02	OPEN			CLOSED			2.5	2.5	18.1	20.6
		THC	110	S	541	110	S	516	565	1103.9		
1/3/90 12:26	V1-3C	CO2/02	OPEN			CLOSED			3.2	3.2	17.2	20.4
		THC	OPEN			CLOSED			590	590		
1/3/90 12:30	V1 disch	CO2/02	OPEN			CLOSED			2.8	2.8	17.8	20.6
		THC	110	S	541	110	S	516	650	1270.0		
1/3/90 12:37	V2-1A	CO2/02	OPEN			CLOSED			0.1	0.1	20.8	20.9
		THC	OPEN			CLOSED			30	30		
		Note: Checked sampling train. Approx. 28 ppm. Therfore, V2-1A approx 0.										
1/3/90 12:43	V2-1B	CO2/02	OPEN			CLOSED			1.25	1.25	19.3	20.6
		THC	OPEN			CLOSED			470	470		
1/3/90 12:47	V2-1C	CO2/02	OPEN			CLOSED			1.3	1.3	19.2	20.5
		THC	50	S	169	150	S	769	450	2497.6		
1/3/90 12:56	V2-2A	CO2/02	OPEN			CLOSED			0.05	0.05	20.9	21.0
		THC	OPEN			CLOSED			22	22		
		Note: Checked sampling train. Approx. 22 ppm. Therfore, V2-2A approx 0.										
1/3/90 13:06	V2-2B	CO2/02	OPEN			CLOSED			1	1	19.7	20.7
		THC	OPEN			CLOSED			940 and rising	940		
1/3/90 13:09	V2-2C	CO2/02	OPEN			CLOSED			1.7	1.7	19	20.7
		THC	50	S	169	150	S	769	600	3330.2		

				CO2/THC DATA								O2 Data	
					Smpl			Dil.		Calc. Conc.	Gastech	
Date/Time	Sample		Smpl (Lt)		Flow	Dil. (Rt.)		Flow	Gastech-CO2 (%)	CO2 (%)	Reading	02+C02
m/d/y/ h:mm	Loc.	Anal.	Rotameter	G/S	cc/min	Rotameter	G/S	cc/min	SIP-THC (ppm)	THC (ppm)	O2 (%)	(%)
1/3/90 13:12	V2-3A	CO2/02	OPEN			CLOSED			0.1	0.1	20.7	20.8
		THC	OPEN			CLOSED			46	46		
		Note: Checked sampling train. Approx. 46 ppm. Therfore, V2-3A approx 0.										
1/3/90 13:15	V2-3B	CO2/02	OPEN			CLOSED			0.9	0.9	19.5	20.4
		THC	OPEN			CLOSED			700 and rising	700		
1/3/90 13:18	V2-3C	CO2/02	OPEN			CLOSED			2.2	2.2	18.5	20.7
		THC	50	S	169	150	S	769	550	3052.7		
1/3/90 13:22	V2 disch	CO2/02	OPEN			CLOSED			2.25	2.25	18.1	20.4
		THC	110	S	541	110	S	516	980	1914.7		
1/3/90 13:49	V4A	CO2/02	DIRECT						0.2		20.6	20.8
		THC	DIRECT						ND			
1/3/90 13:51	V4B	CO2/02	DIRECT						0.2		20.6	20.8
		THC	DIRECT						ND			
1/3/90 13:53	V4C	CO2/02	DIRECT						0.3		20.5	20.8
		THC	DIRECT						ND			
1/3/90 13:55	V4 disch	CO2/02	DIRECT						0.3		20.5	20.8
		THC	DIRECT						ND			
1/3/90 14:00	V3 disch	CO2/02	DIRECT						2.9		17.8	20.7
		THC	DIRECT						940			
1/3/90 14:03	V3A	CO2/02	DIRECT						3		17.7	20.7
		THC	DIRECT						530			
1/3/90 14:05	V3B	CO2/02	DIRECT						3.2		17.3	20.5
		THC	DIRECT						740			
1/3/90 14:07	V3C	CO2/02	DIRECT						3.2		17.2	20.4
		THC	DIRECT						630			
1/3/90 14:09	V3 inlet	CO2/02	DIRECT						2.9		17.9	20.8
		THC	DIRECT						approx. 3200			
		Note: The 3200 direct reading will be too high due to nonlinearity discussed above. See 2188 ppm below.										
1/3/90 14:13	V3 disch	CO2/02	OPEN			CLOSED			2.8	2.8	17.9	20.7
		THC	OPEN			CLOSED			940	940		

				CO2/THC DATA								O2 Data	
					Smpl			Dil.			Calc. Conc.	Gastech	
Date/Time	Sample		Smpl (Lt)		Flow	Dil. (Rt.)		Flow	Gastech-CO2 (%)	CO2 (%)	Reading	02+C02
m/d/y/ h:mm	Loc.	Anal.	Rotameter	G/S	cc/min	Rotameter	G/S	cc/min	SIP-THC (ppm)	THC (ppm)	O2 (%)	(%)
1/3/90 14:15	V3A	CO2/02	OPEN			CLOSED			3	3	17.9	20.9
		THC	OPEN			CLOSED			605	605		
1/3/90 14:17	V3B	CO2/02	OPEN			CLOSED			3.2	3.2	17.4	20.6
1/3/90 14:19	V3C	CO2/02	OPEN			CLOSED			3.2	3.2	17.4	20.6
1/3/90 14:20	V3 inlet	CO2/02	OPEN			CLOSED			2.8	2.8	18	20.8
		THC	110	S	541	110	S	516	1120	2188.2		
1/3/90 14:28	V1 disch	CO2/02	OPEN			CLOSED			2.8	2.8	18.1	20.9
		THC	110	S	541	110	S	516	950	1856.1		
1/3/90 14:32	V2 disch	CO2/02	OPEN			CLOSED			2.4	2.4	18.3	20.7
		THC	110	S	541	110	S	516	980	1914.7		
		Note: The disparity in V1 values resulted from a battery change between initial V1 and V2 readings.										
		The direct and sample train readings were conducted on V3 to illustrate that the same values were obtainable.										
1/3/90 15:33		Blowers off for shutdown test No. 3.										
		Note: All readings during the shutdown test were collected directly with the full-scale instrument.										
1/3/90 16:15	Standard check with atmospheric air								0.0		20.9	20.9
	Standard check with 20.1% CO2/N2								20.0		0	20.0
1/3/90 16:20	V1-1A	CO2/02	DIRECT						3.9		16.5	20.4
1/3/90 16:22	V1-1B	CO2/02	DIRECT						3.5		17.1	20.6
1/3/90 16:24	V1-1C	CO2/02	DIRECT						3.4		17.4	20.8
1/3/90 16:26	V1-2A	CO2/02	DIRECT						2.2		18.1	20.3
1/3/90 16:28	V1-2B	CO2/02	DIRECT						2.9		17.7	20.6
1/3/90 16:30	V1-2C	CO2/02	DIRECT						3.9		16.7	20.6
1/3/90 16:32	V1-3A	CO2/02	DIRECT						1		19.1	20.1
1/3/90 16:34	V1-3B	CO2/02	DIRECT						2.6		18	20.6
1/3/90 16:36	V1-3C	CO2/02	DIRECT						3.3		17.1	20.4
1/3/90 16:37	V2-1A	CO2/02	DIRECT						0.15		20.6	20.8
1/3/90 16:39	V2-1B	CO2/02	DIRECT						1.5		18.5	20.0
1/3/90 16:40	V2-1C	CO2/02	DIRECT						1.8		18.9	20.7
1/3/90 16:42	V2-2A	CO2/02	DIRECT						0.1		20.8	20.9
1/3/90 16:43	V2-2B	CO2/02	DIRECT						1.1		19.5	20.6

				CO2/THC DATA							O2 Data	
					Smpl			Dil.		Calc. Conc.	Gastech	
Date/Time	Sample		Smpl (Lt)		Flow	Dil. (Rt.)		Flow	Gastech-CO2 (%)	CO2 (%)	Reading	02+C02
m/d/y/ h:mm	Loc.	Anal.	Rotameter	G/S	cc/min	Rotameter	G/S	cc/min	SIP-THC (ppm)	THC (ppm)	O2 (%)	(%)
1/3/90 16:44	V2-2C	CO2/02	DIRECT						2.1		18.6	20.7
1/3/90 16:47	V2-3A	CO2/02	DIRECT						0.15		20.5	20.7
1/3/90 16:48	V2-3B	CO2/02	DIRECT						1.1		19.4	20.5
1/3/90 16:49	V2-3C	CO2/02	DIRECT						2.4		18.2	20.6
1/3/90 16:58	V3A	CO2/02	DIRECT						3.1		17.5	20.6
1/3/90 16:59	V3B	CO2/02	DIRECT						3.3		17.2	20.5
1/3/90 17:00	V3C	CO2/02	DIRECT						3.3		17.2	20.5
1/3/90 17:01	V4A	CO2/02	DIRECT						0.3		20.5	20.8
1/3/90 17:02	V4B	CO2/02	DIRECT						0.3		20.5	20.8
1/3/90 17:03	V4C	CO2/02	DIRECT						0.3		20.5	20.8
1/3/90 17:12	Standard check with atmospheric air								0.0		20.9	
1/3/90 17:12	Standard check with 20.1% CO2/N2								20.0		0	
1/3/90 19:14	Standard check with atmospheric air								0.0		20.9	
1/3/90 19:14	Standard check with 20.1% CO2/N2								20.0		0	
1/3/90 19:16	V1-1A	CO2/02	DIRECT						4		16.2	20.2
1/3/90 19:18	V1-1B	CO2/02	DIRECT						3.6		17.1	20.7
1/3/90 19:20	V1-1C	CO2/02	DIRECT						3.5		17.2	20.7
1/3/90 19:22	V1-2A	CO2/02	DIRECT						2.7		17.1	19.8
1/3/90 19:24	V1-2B	CO2/02	DIRECT						3.1		17.5	20.6
1/3/90 19:26	V1-2C	CO2/02	DIRECT						3.9		16.7	20.6
1/3/90 19:28	V1-3A	CO2/02	DIRECT						1.6		18.2	19.8
1/3/90 19:30	V1-3B	CO2/02	DIRECT						2.8		17.7	20.5
1/3/90 19:32	V1-3C	CO2/02	DIRECT						3.5		17	20.5
1/3/90 19:34	V2-1A	CO2/02	DIRECT						0.3		20.4	20.7
1/3/90 19:35	V2-1B	CO2/02	DIRECT						2.1		17.7	19.8
1/3/90 19:36	V2-1C	CO2/02	DIRECT						2.2		18.5	20.7
1/3/90 19:38	V2-2A	CO2/02	DIRECT						0.15		20.5	20.7
1/3/90 19:40	V2-2B	CO2/02	DIRECT						1.3		19.1	20.4
1/3/90 19:42	V2-2C	CO2/02	DIRECT						2.5		18.4	20.9
1/3/90 19:44	V2-3A	CO2/02	DIRECT						0.3		20.2	20.5
1/3/90 19:46	V2-3B	CO2/02	DIRECT						1.4		19	20.4

				CO2/THC DATA								O2 Data	
					Smpl			Dil.			Calc. Conc.	Gastech	
Date/Time	Sample		Smpl (Lt)		Flow	Dil. (Rt.)		Flow	Gastech-CO2 (%)		CO2 (%)	Reading	02+C02
m/d/y/ h:mm	Loc.	Anal.	Rotameter	G/S	cc/min	Rotameter	G/S	cc/min	SIP-THC (ppm)		THC (ppm)	O2 (%)	(%)
1/3/90 19:48	V2-3C	CO2/02	DIRECT						2.9			17.6	20.5
1/3/90 19:51	V3A	CO2/02	DIRECT						3.2			17.6	20.8
1/3/90 19:53	V3B	CO2/02	DIRECT						3.3			17.3	20.6
1/3/90 19:55	V3C	CO2/02	DIRECT						3.3			17.3	20.6
1/3/90 19:58	Standard check with atmospheric air								0.0			20.9	
	Standard check with 20.1% CO2/N2								20.0			0	
1/3/90 23:08	Standard check with atmospheric air								0.0			20.9	
	Standard check with 20.1% CO2/N2								20.0			0	
1/3/90 23:12	V1-1A	CO2/02	DIRECT						4.2			15.8	20.0
1/3/90 23:13	V1-1B	CO2/02	DIRECT						3.7			16.8	20.5
1/3/90 23:14	V1-1C	CO2/02	DIRECT						3.6			17.1	20.7
1/3/90 23:16	V1-2A	CO2/02	DIRECT						3.2			16.2	19.4
1/3/90 23:18	V1-2B	CO2/02	DIRECT						3.3			17.1	20.4
1/3/90 23:20	V1-2C	CO2/02	DIRECT						3.9			16.6	20.5
1/3/90 23:22	V1-3A	CO2/02	DIRECT						2.2			17.2	19.4
1/3/90 23:24	V1-3B	CO2/02	DIRECT						3			17.2	20.2
1/3/90 23:26	V1-3C	CO2/02	DIRECT						3.6			16.8	20.4
1/3/90 23:27	V2-1A	CO2/02	DIRECT						0.3			19.8	20.1
1/3/90 23:28	V2-1B	CO2/02	DIRECT						2.7			16.3	19.0
1/3/90 23:30	V2-1C	CO2/02	DIRECT						2.3			17.8	20.1
1/3/90 23:32	V2-2A	CO2/02	DIRECT						0.15			20.2	20.4
1/3/90 23:34	V2-2B	CO2/02	DIRECT						1.7			18.2	19.9
1/3/90 23:35	V2-2C	CO2/02	DIRECT						2.6			17.8	20.4
1/3/90 23:37	V2-3A	CO2/02	DIRECT						0.5			19.2	19.7
1/3/90 23:39	V2-3B	CO2/02	DIRECT						1.8			18.1	19.9
1/3/90 23:40	V2-3C	CO2/02	DIRECT						3.2			16.8	20.0
1/3/90 23:44	V3A	CO2/02	DIRECT						3.1			17.2	20.3
1/3/90 23:45	V3B	CO2/02	DIRECT						3.2			17	20.2
1/3/90 23:47	V3C	CO2/02	DIRECT						3.2			17.1	20.3
1/3/90 23:50	Standard check with atmospheric air								0.0			20.9	
	Standard check with 20.1% CO2/N2								20.0			0	

				CO2/THC DATA								O2 Data	
					Smpl			Dil.			Calc. Conc.	Gastech	
Date/Time	Sample		Smpl (Lt)		Flow	Dil. (Rt.)		Flow	Gastech-CO2 (%)		CO2 (%)	Reading	02+C02
m/d/y/ h:mm	Loc.	Anal.	Rotameter	G/S	cc/min	Rotameter	G/S	cc/min	SIP-THC (ppm)		THC (ppm)	O2 (%)	(%)
1/4/90 5:32	Standard check with atmospheric air								0.0			20.9	
	Standard check with 20.1% CO2/N2								20.0			0	
1/4/90 5:39	V1-1A	CO2/02	DIRECT						4.3			15	19.3
1/4/90 5:40	V1-1B	CO2/02	DIRECT						3.8			16.2	20.0
1/4/90 5:42	V1-1C	CO2/02	DIRECT						3.8			16.4	20.2
1/4/90 5:44	V1-2A	CO2/02	DIRECT						3.6			15	18.6
1/4/90 5:46	V1-2B	CO2/02	DIRECT						3.5			16.2	19.7
1/4/90 5:48	V1-2C	CO2/02	DIRECT						4			16.1	20.1
1/4/90 5:49	V1-3A	CO2/02	DIRECT						2.7			16.2	18.9
1/4/90 5:51	V1-3B	CO2/02	DIRECT						3.3			16.3	19.6
1/4/90 5:52	V1-3C	CO2/02	DIRECT						3.8			16	19.8
1/4/90 5:55	V2-1A	CO2/02	DIRECT						0.6			18.8	19.4
1/4/90 5:57	V2-1B	CO2/02	DIRECT						3.6			14	17.6
1/4/90 5:59	V2-1C	CO2/02	DIRECT						2.9			16.3	19.2
1/4/90 6:00	V2-2A	CO2/02	DIRECT						0.2			19.1	19.3
1/4/90 6:02	V2-2B	CO2/02	DIRECT						2.2			16.9	19.1
1/4/90 6:04	V2-2C	CO2/02	DIRECT						3			16.3	19.3
1/4/90 6:05	V2-3A	CO2/02	DIRECT						0.8			18	18.8
1/4/90 6:07	V2-3B	CO2/02	DIRECT						2.6			16.7	19.3
1/4/90 6:09	V2-3C	CO2/02	DIRECT						3.8			15.3	19.1
1/4/90 6:13	V3A	CO2/02	DIRECT						3.2			17	20.2
1/4/90 6:15	V3B	CO2/02	DIRECT						3.3			16.8	20.1
1/4/90 6:16	V3C	CO2/02	DIRECT						3.3			16.8	20.1
1/4/90 6:19	Standard check with atmospheric air								0.0			20.9	
	Standard check with 20.1% CO2/N2								20.0			0	
1/4/90 12:06	Standard check with atmospheric air								0.0			20.9	
	Standard check with 20.1% CO2/N2								20.0			0	
1/4/90 12:09	V1-1A	CO2/02	DIRECT						4.4			14.1	18.5
1/4/90 12:11	V1-1B	CO2/02	DIRECT						3.8			15.5	19.3
1/4/90 12:13	V1-1C	CO2/02	DIRECT						3.8			15.8	19.6
1/4/90 12:15	V1-2A	CO2/02	DIRECT						3.8			13.9	17.7

				CO2/THC DATA								O2 Data	
					Smpl			Dil.			Calc. Conc.	Gastech	
Date/Time	Sample		Smpl (Lt)		Flow	Dil. (Rt.)		Flow	Gastech-CO2 (%)	CO2 (%)	Reading	02+C02
m/d/y/ h:mm	Loc.	Anal.	Rotameter	G/S	cc/min	Rotameter	G/S	cc/min	SIP-THC (ppm)	THC (ppm)	O2 (%)	(%)
1/4/90 12:16	V1-2B	CO2/02	DIRECT						3.7		15.5	19.2
1/4/90 12:18	V1-2C	CO2/02	DIRECT						4		15.3	19.3
1/4/90 12:20	V1-3A	CO2/02	DIRECT						3		15.2	18.2
1/4/90 12:22	V1-3B	CO2/02	DIRECT						3.5		15.5	19.0
1/4/90 12:24	V1-3C	CO2/02	DIRECT						3.9		15.2	19.1
1/4/90 12:26	V2-1A	CO2/02	DIRECT						0.6		17.9	18.5
1/4/90 12:28	V2-1B	CO2/02	DIRECT						4.2		11.9	16.1
1/4/90 12:30	V2-1C	CO2/02	DIRECT						3.2		14.8	18.0
1/4/90 12:32	V2-2A	CO2/02	DIRECT						0.3		18.1	18.4
1/4/90 12:34	V2-2B	CO2/02	DIRECT						2.7		15.2	17.9
1/4/90 12:36	V2-2C	CO2/02	DIRECT						3.3		14.7	18.0
1/4/90 12:38	V2-3A	CO2/02	DIRECT						1.2		16.3	17.5
1/4/90 12:40	V2-3B	CO2/02	DIRECT						3.1		15.1	18.2
1/4/90 12:42	V2-3C	CO2/02	DIRECT						4		14	18.0
1/4/90 12:48	V3A	CO2/02	DIRECT						3.2		16.8	20.0
1/4/90 12:49	V3B	CO2/02	DIRECT						3.2		16.6	19.8
1/4/90 12:50	V3C	CO2/02	DIRECT						3.2		16.7	19.9
1/4/90 12:53	V4A	CO2/02	DIRECT						0.4		20.2	20.6
1/4/90 12:54	V4B	CO2/02	DIRECT						0.3		20.3	20.6
1/4/90 12:56	V4C	CO2/02	DIRECT						0.3		20.3	20.6
1/4/90 13:00	Standard check with atmospheric air								0.0		20.9	20.9
	Standard check with 20.1% CO2/N2								20.0		0	
1/4/90 17:21	Standard check with atmospheric air								0.0		20.9	
	Standard check with 20.1% CO2/N2								20.0		0	
1/4/90 17:26	V1-1A	CO2/02	DIRECT						4.8		13.3	18.1
1/4/90 17:28	V1-1B	CO2/02	DIRECT						4.2		15.1	19.3
1/4/90 17:30	V1-1C	CO2/02	DIRECT						4.1		15.4	19.5
1/4/90 17:32	V1-2A	CO2/02	DIRECT						4.3		13.2	17.5
1/4/90 17:34	V1-2B	CO2/02	DIRECT						4		15.1	19.1
1/4/90 17:36	V1-2C	CO2/02	DIRECT						4.3		15.1	19.4
1/4/90 17:38	V1-3A	CO2/02	DIRECT						3.6		14.8	18.4

				CO2/THC DATA								O2 Data	
					Smpl			Dil.			Calc. Conc.	Gastech	
Date/Time	Sample		Smpl (Lt)		Flow	Dil. (Rt.)		Flow	Gastech-CO2 (%)	CO2 (%)	Reading	02+C02
m/d/y/ h:mm	Loc.	Anal.	Rotameter	G/S	cc/min	Rotameter	G/S	cc/min	SIP-THC (ppm)	THC (ppm)	O2 (%)	(%)
1/4/90 17:40	V1-3B	CO2/02	DIRECT						3.9		15.1	19.0
1/4/90 17:42	V1-3C	CO2/02	DIRECT						4.3		14.8	19.1
1/4/90 17:44	V2-1A	CO2/02	DIRECT						1.2		17.1	18.3
1/4/90 17:45	V2-1B	CO2/02	DIRECT						5		10.8	15.8
1/4/90 17:46	V2-1C	CO2/02	DIRECT						4		13.9	17.9
1/4/90 17:47	V2-2A	CO2/02	DIRECT						0.75		17.3	18.1
1/4/90 17:48	V2-2B	CO2/02	DIRECT						3.3		14.4	17.7
1/4/90 17:50	V2-2C	CO2/02	DIRECT						3.9		13.9	17.8
1/4/90 17:52	V2-3A	CO2/02	DIRECT						2		15.9	17.9
1/4/90 17:53	V2-3B	CO2/02	DIRECT						3.6		14.5	18.1
1/4/90 17:55	V2-3C	CO2/02	DIRECT						4.7		13	17.7
1/4/90 18:00	V3A	CO2/02	DIRECT						3.5		16.6	20.1
1/4/90 18:01	V3B	CO2/02	DIRECT						3.6		16.5	20.1
1/4/90 18:02	V3C	CO2/02	DIRECT						3.5		16.5	20.0
1/4/90 18:04	Standard check with atmospheric air								.05		20.9	
	Standard check with 20.1% CO2/N2								20.0		0	
1/5/90 6:51	Standard check with atmospheric air								0.0		20.9	
	Standard check with 20.1% CO2/N2								20.0		0	
1/5/90 6:55	V1-1A	CO2/02	DIRECT						5.8		11.2	17.0
1/5/90 6:57	V1-1B	CO2/02	DIRECT						4.7		13.4	18.1
1/5/90 6:59	V1-1C	CO2/02	DIRECT						4.5		13.9	18.4
1/5/90 7:00	V1-2A	CO2/02	DIRECT						5.2		11.1	16.3
1/5/90 7:02	V1-2B	CO2/02	DIRECT						4.6		13.2	17.8
1/5/90 7:04	V1-2C	CO2/02	DIRECT						4.7		13.5	18.2
1/5/90 7:06	V1-3A	CO2/02	DIRECT						4.3		12.7	17.0
1/5/90 7:08	V1-3B	CO2/02	DIRECT						4.5		13.3	17.8
1/5/90 7:10	V1-3C	CO2/02	DIRECT						4.8		13.1	17.9
1/5/90 7:11	V2-1A	CO2/02	DIRECT						2.3		14.2	16.5
1/5/90 7:13	V2-1B	CO2/02	DIRECT						6.4		7.5	13.9
1/5/90 7:15	V2-1C	CO2/02	DIRECT		Note: Sucking some water.				4.8		11.2	16.0
1/5/90 7:17	V2-2A	CO2/02	DIRECT						1.4		14.8	16.2

			CO2/THC DATA								O2 Data	
					Smpl			Dil.		Calc. Conc.	Gastech	
Date/Time	Sample		Smpl (Lt)		Flow	Dil. (Rt.)		Flow	Gastech-CO2 (%)	CO2 (%)	Reading	02+C02
m/d/y h:mm	Loc.	Anal.	Rotameter	G/S	cc/min	Rotameter	G/S	cc/min	SIP-THC (ppm)	THC (ppm)	O2 (%)	(%)
1/5/90 7:18	V2-2B	CO2/02	DIRECT						4.3		11.2	15.5
1/5/90 7:20	V2-2C	CO2/02	DIRECT						4.8		10.7	15.5
1/5/90 7:24	V2-3A	CO2/02	DIRECT						3.2		13.1	16.3
1/5/90 7:26	V2-3B	CO2/02	DIRECT						4.7		11.9	16.6
1/5/90 7:28	V2-3C	CO2/02	DIRECT						5.9		10.3	16.2
1/5/90 7:32	V3A	CO2/02	DIRECT						3.6		16.1	19.7
1/5/90 7:33	V3B	CO2/02	DIRECT						3.7		16.1	19.8
1/5/90 7:35	V3C	CO2/02	DIRECT						3.7		16	19.7
1/5/90 7:36	V4A	CO2/02	DIRECT						0.6		20.1	20.7
1/5/90 7:37	V4B	CO2/02	DIRECT						0.6		20.1	20.7
1/5/90 7:39	V4C	CO2/02	DIRECT						0.6		20.1	20.7
1/5/90 7:41	Standard check with atmospheric air								.05		20.90	
	Standard check with 20.1% CO2/N2								19.80		0.2	
1/5/90 7:41			Note: Dewatering system turned on.									
1/5/90 7:41	dewater	CO2/02	DIRECT						.70		20.10	20.8
		THC							400-550			
1/5/90 16:34	Standard check with atmospheric air								0.0		20.9	
	Standard check with 20.1% CO2/N2							Temp °F	20.0		0.0	
1/5/90 16:41	V1-1A	CO2/02	DIRECT					64	6.3		9.6	15.9
1/5/90 16:47	V1-1B	CO2/02	DIRECT					64	5.1		12.1	17.2
1/5/90 16:52	V1-1C	CO2/02	DIRECT					64	4.9		12.4	17.3
1/5/90 16:55	V1-2A	CO2/02	DIRECT					64	6		9.5	15.5
1/5/90 16:59	V1-2B	CO2/02	DIRECT					64	5.1		11.9	17.0
1/5/90 17:02	V1-2C	CO2/02	DIRECT					64	5.1		12.1	17.2
1/5/90 17:04	V1-3A	CO2/02	DIRECT						5		11.2	16.2
1/5/90 17:05	V1-3B	CO2/02	DIRECT						5.1		12.1	17.2
1/5/90 17:07	V1-3C	CO2/02	DIRECT						5.4		11.9	17.3
1/5/90 17:09	V2-1A	CO2/02	DIRECT					64	1.7		18.5	20.2
1/5/90 17:16	V2-1B	CO2/02	DIRECT						7.5		5.8	13.3
1/5/90 17:18	V2-1C	CO2/02	DIRECT						6		8.9	14.9
1/5/90 17:20	V2-2A	CO2/02	DIRECT						1.8		15.5	17.3

				CO2/THC DATA								O2 Data	
					Smpl			Dil.		Calc. Conc.	Gastech	
Date/Time	Sample		Smpl (Lt)		Flow	Dil. (Rt.)		Flow	Gastech-CO2 (%)	CO2 (%)	Reading	02+C02
m/d/y/ h:mm	Loc.	Anal.	Rotameter	G/S	cc/min	Rotameter	G/S	cc/min	SIP-THC (ppm)	THC (ppm)	O2 (%)	(%)
1/5/90 17:24	V2-2B	CO2/02	DIRECT					64	5.2		9.2	14.4
1/5/90 17:26	V2-2C	CO2/02	DIRECT						5.7		8.5	14.2
1/5/90 17:27	V2-3A	CO2/02	DIRECT						3.2		14.4	17.6
1/5/90 17:30	V2-3B	CO2/02	DIRECT						5.3		10.4	15.7
1/5/90 17:32	V2-3C	CO2/02	DIRECT						6.7		8.5	15.2
1/5/90 17:34	V3A	CO2/02	DIRECT						3.8		15.8	19.6
1/5/90 17:35	V3B	CO2/02	DIRECT						3.9		15.8	19.7
1/5/90 17:36	V3C	CO2/02	DIRECT						3.9		15.7	19.6
1/5/90 17:40	Standard check with atmospheric air								0.05		20.9	
	Standard check with 20.1% CO2/N2								20.0		0.0	
1/6/90 7:50	Standard check with atmospheric air								0.0		20.9	
	Standard check with 20.1% CO2/N2								20.0		0.0	
1/6/90 7:55	V1-1A	CO2/02	DIRECT						7.3		6.8	14.1
1/6/90 7:57	V1-1B	CO2/02	DIRECT						5.9		9.9	15.8
1/6/90 7:58	V1-1C	CO2/02	DIRECT						5.7		10.3	16 0
1/6/90 7:59	V1-2A	CO2/02	DIRECT						7.1		7.2	14.3
1/6/90 8:01	V1-2B	CO2/02	DIRECT						6		9.8	15.8
1/6/90 8:03	V1-2C	CO2/02	DIRECT						6.1		10.1	16.2
1/6/90 8:07	V1-3A	CO2/02	DIRECT						6.1		9.1	15.2
1/6/90 8:09	V1-3B	CO2/02	DIRECT						6.1		10.4	16.5
1/6/90 8:11	V1-3C	CO2/02	DIRECT						6.2		10.1	16.3
1/6/90 8:13	V2-1A	CO2/02	DIRECT						0.2		20.7	20.9
1/6/90 8:15	V2-1B	CO2/02	DIRECT						8.5		6.1	14.6
1/6/90 8:17	V2-1C	CO2/02	DIRECT	Note: No flow - sucking water								
1/6/90 8:19	V2-2A	CO2/02	DIRECT						3.4		12.2	15.6
1/6/90 8:21	V2-2B	CO2/02	DIRECT						7.9		5.4	13.3
1/6/90 8:24	V2-2C	CO2/02	DIRECT						7.9		5.1	13.0
1/6/90 8:26	V2-3A	CO2/02	DIRECT						0.8		20	20.8
1/6/90 8:28	V2-3B	CO2/02	DIRECT						5.8		11.3	17.1
1/6/90 8:30	V2-3C	CO2/02	DIRECT						7.2		8.5	15.7
1/6/90 8:34	V3A	CO2/02	DIRECT						3.9		15.4	19.3

				CO2/THC DATA								O2 Data	
					Smpl			Dil.			Calc. Conc.	Gastech	
Date/Time	Sample		Smpl (Lt)		Flow	Dil. (Rt.)		Flow	Gastech-CO2 (%)	CO2 (%)	Reading	02+C02
m/d/y/ h:mm	Loc.	Anal.	Rotameter	G/S	cc/min	Rotameter	G/S	cc/min	SIP-THC (ppm)	THC (ppm)	O2 (%)	(%)
1/6/90 8:36	V3B	CO2/02	DIRECT						4		15.2	19.2
1/6/90 8:38	V3C	CO2/02	DIRECT						4		15.3	19.3
1/6/90 8:39	V4A	CO2/02	DIRECT						0.9		19.8	20.7
1/6/90 8:40	V4B	CO2/02	DIRECT						1		19.8	20.8
1/6/90 8:41	V4C	CO2/02	DIRECT						1		19.8	20.8
1/6/90 8:45	Standard check with atmospheric air								0.0		20.9	
	Standard check with 20.1% CO2/N2								20.0		0.0	
1/6/90 16:00	Standard check with atmospheric air								0.0		20.9	
	Standard check with 20.1% CO2/N2								20.0		0.0	
1/6/90 16:04	V1-1A	CO2/02	DIRECT						7.8		5.4	13.2
1/6/90 16:06	V1-1B	CO2/02	DIRECT						6.2		8.6	14.8
1/6/90 16:08	V1-1C	CO2/02	DIRECT						6		9.1	15.1
1/6/90 16:10	V1-2A	CO2/02	DIRECT						7.4		6.2	13.6
1/6/90 16:12	V1-2B	CO2/02	DIRECT						6.3		8.5	14.8
1/6/90 16:14	V1-2C	CO2/02	DIRECT						6.3		8.9	15.2
1/6/90 16:16	V1-3A	CO2/02	DIRECT						6.4		8.4	14.8
1/6/90 16:18	V1-3B	CO2/02	DIRECT						6.3		9.4	15.7
1/6/90 16:20	V1-3C	CO2/02	DIRECT						6.5		9.1	15.6
1/6/90 16:22	V2-1A	CO2/02	DIRECT						0.2		20.8	21.0
1/6/90 16:24	V2-1B	CO2/02	DIRECT						8.5		7.5	16.0
1/6/90 16:26	V2-1C	CO2/02	DIRECT	Note: No flow - sucking water								
1/6/90 16:28	V2-2A	CO2/02	DIRECT						3.3		13.1	16.4
1/6/90 16:30	V2-2B	CO2/02	DIRECT						9		5.2	14.2
1/6/90 16:32	V2-2C	CO2/02	DIRECT						9.1		4.8	13.9
1/6/90 16:34	V2-3A	CO2/02	DIRECT						0.7		19.9	20.6
1/6/90 16:36	V2-3B	CO2/02	DIRECT						6.1		11.8	17.9
1/6/90 16:37	V2-3C	CO2/02	DIRECT						7.5		8.8	16.3
1/6/90 16:39	V3A	CO2/02	DIRECT						4		15.2	19.2
1/6/90 16:40	V3B	CO2/02	DIRECT						4.1		15.1	19.2
1/6/90 16:42	V3C	CO2/02	DIRECT						4		15.1	19.1
1/6/90 16:44	V4A	CO2/02	DIRECT						1		19.7	20.7

				CO2/THC DATA								O2 Data	
					Smpl			Dil.			Calc. Conc.	Gastech	
Date/Time	Sample		Smpl (Lt)		Flow	Dil. (Rt.)		Flow	Gastech-CO2 (%)	CO2 (%)	Reading	02+C02
m/d/y/ h:mm	Loc.	Anal.	Rotameter	G/S	cc/min	Rotameter	G/S	cc/min	SIP-THC (ppm)	THC (ppm)	O2 (%)	(%)
1/6/90 16:46	V4B	CO2/02	DIRECT						0.9		19.7	20.6
1/6/90 16:47	V4C	CO2/02	DIRECT						1		19.7	20.7
1/6/90 16:50	Standard check with atmospheric air								0.0		20.9	
	Standard check with 20.1% CO2/N2								20.0		0.0	
1/7/90 8:13	Standard check with atmospheric air								0.0		20.9	
	Standard check with 20.1% CO2/N2								20.0		0.0	
1/7/90 8:32	V1-1A	CO2/02	DIRECT						8.9		3.3	12.2
1/7/90 8:34	V1-1B	CO2/02	DIRECT						7.2		6.2	13.4
1/7/90 8:36	V1-1C	CO2/02	DIRECT						6.8		6.9	13.7
1/7/90 8:38	V1-2A	CO2/02	DIRECT						8.4		4.2	12.6
1/7/90 8:40	V1-2B	CO2/02	DIRECT						7.3		6.2	13.5
1/7/90 8:42	V1-2C	CO2/02	DIRECT						7.2		6.4	13.6
1/7/90 8:44	V1-3A	CO2/02	DIRECT						7.2		6.5	13.7
1/7/90 8:46	V1-3B	CO2/02	DIRECT						7.1		7.5	14.6
1/7/90 8:48	V1-3C	CO2/02	DIRECT						7.3		7.2	14.5
1/7/90 8:50	V2-1A	CO2/02	DIRECT						0.2		20.7	20.9
1/7/90 8:52	V2-1B	CO2/02	DIRECT						8		9.6	17.6
1/7/90 8:54	V2-1C	CO2/02	DIRECT	Note: Water down - sucking air					7		14.5	21.5
1/7/90 8:56	V2-2A	CO2/02	DIRECT						7.1		11.3	18.4
1/7/90 8:58	V2-2B	CO2/02	DIRECT						10.1		5.9	16.0
1/7/90 9:00	V2-2C	CO2/02	DIRECT						10.5		5.1	15.6
1/7/90 9:02	V2-3A	CO2/02	DIRECT						0.6		20.1	20.7
1/7/90 9:04	V2-3B	CO2/02	DIRECT						6.5		12	18.5
1/7/90 9:06	V2-3C	CO2/02	DIRECT						8.3		9.1	17.4
1/7/90 9:09	V3A	CO2/02	DIRECT						4		14.9	18.9
1/7/90 9:11	V3B	CO2/02	DIRECT						4.1		14.7	18.8
1/7/90 9:13	V3C	CO2/02	DIRECT						4.1		14.7	18.8
1/7/90 9:15	V4A	CO2/02	DIRECT						1		19.3	20.3
1/7/90 9:17	V4B	CO2/02	DIRECT						1		19.3	20.3
1/7/90 9:19	V4C	CO2/02	DIRECT						0.9		19.4	20.3

			CO2/THC DATA							O2 Data	
					Smpl			Dil.		Calc. Conc.	Gastech	
Date/Time	Sample		Smpl (Lt)		Flow	Dil. (Rt.)		Flow	Gastech-CO2 (%)	CO2 (%)	Reading	02+C02
m/d/y h:mm	Loc.	Anal.	Rotameter	G/S	cc/min	Rotameter	G/S	cc/min	SIP-THC (ppm)	THC (ppm)	O2 (%)	(%)
1/7/90 9:21	Standard check with atmospheric air								0.0		20.9	
	Standard check with 20.1% CO2/N2								20.0		0.0	
1/8/90 9:44	Standard check with atmospheric air								0.0		20.9	
	Standard check with 20.1% CO2/N2								20.0		0.0	
1/8/90 10:10	V1-1A	CO2/02	DIRECT						10.1		0.8	10.9
1/8/90 10:12	V1-1B	CO2/02	DIRECT						8.5		3	11.5
1/8/90 10:14	V1-1C	CO2/02	DIRECT						8.1		3.5	11.6
1/8/90 10:17	V1-2A	CO2/02	DIRECT						9.9		1.3	11.2
1/8/90 10:19	V1-2B	CO2/02	DIRECT						8.9		2.8	11.7
1/8/90 10:21	V1-2C	CO2/02	DIRECT						8.7		2.9	11.6
1/8/90 10:23	V1-3A	CO2/02	DIRECT						8.7		3.6	12.3
1/8/90 10:25	V1-3B	CO2/02	DIRECT						8.3		4.5	12.8
1/8/90 10:27	V1-3C	CO2/02	DIRECT						8.7		4.1	12.8
1/8/90 10:29	V2-1A	CO2/02	DIRECT						0.4		20.2	20.6
1/8/90 10:31	V2-1B	CO2/02	DIRECT						8.1		8.4	16.5
1/8/90 10:33	V2-1C	CO2/02	DIRECT	Note: No flow - sucking water								
1/8/90 10:34	V2-2A	CO2/02	DIRECT						3.4		18	21.4
1/8/90 10:36	V2-2B	CO2/02	DIRECT						10.9		5.9	16.8
1/8/90 10:38	V2-2C	CO2/02	DIRECT						11.8		4.4	16.2
1/8/90 10:40	V2-3A	CO2/02	DIRECT						0.7		19.4	20.1
1/8/90 10:42	V2-3B	CO2/02	DIRECT						7.2		10.7	17.9
1/8/90 10:44	V2-3C	CO2/02	DIRECT						9.8		7	16.8
1/8/90 10:49	V3A	CO2/02	DIRECT						4.1		14.8	18.9
1/8/90 10:50	V3B	CO2/02	DIRECT						4.25		14.2	18.5
1/8/90 10:52	V3C	CO2/02	DIRECT						4.2		14.3	18.5
1/8/90 10:53	V4A	CO2/02	DIRECT						1.2		19.2	20.4
1/8/90 10:55	V4B	CO2/02	DIRECT						1.1		19.2	20.3
1/8/90 10:57	V4C	CO2/02	DIRECT						1.2		19.2	20.4
1/8/90 10:59	Standard check with atmospheric air								0.0		20.9	
	Standard check with 20.1% CO2/N2								20.0		0.0	
1/8/90 13:30		Blowers started - V1set at 14.2 and V2 at 15										

				CO2/THC DATA								O2 Data	
					Smpl			Dil.			Calc. Conc.	Gastech	
Date/Time	Sample		Smpl (Lt)		Flow	Dil. (Rt.)		Flow	Gastech-CO2 (%)	CO2 (%)	Reading	02+C02
m/d/y/ h:mm	Loc.	Anal.	Rotameter	G/S	cc/min	Rotameter	G/S	cc/min	SIP-THC (ppm)	THC (ppm)	O2 (%)	(%)
1/9/90 9:14	Standard check with atmospheric air								0.0		20.9	
	Standard check with 20.1% CO2/N2								20.0		0.0	
1/9/90 9:20	V1 disch	O2	DIRECT								16.2	
1/9/90 9:25	V2 disch	O2	DIRECT								17.2	
1/9/90 9:30	V3 inlet	O2	DIRECT								16.1	
1/9/90 9:35	V3 disch	O2	DIRECT								16.1	
1/9/90 17:00	V1 disch	O2	DIRECT								17.5	
1/9/90 17:05	V2 disch	O2	DIRECT								17.5	
1/10/90 9:00	V1 disch	O2	DIRECT								17.5	
1/10/90 9:05	V2 disch	O2	DIRECT								17.5	
1/10/90 11:43	V1 disch	CO2/O2	DIRECT						3.2	3.2	17.5	20.7
		THC	110	S	541	110	S	516	1023	1998.7		
1/10/90 11:47	V2 disch	CO2/O2	DIRECT						2.9	2.9	17.3	20.2
1/10/90 12:03	V3 inlet	CO2/O2	DIRECT						3	3	17.6	20.6
		THC	110	S	541	110	S	516	1120	2188.2		
1/10/90 12:05	V3 disch	CO2/O2	DIRECT						2.85	2.85	18.1	21.0
		THC	110	S	541	110	S	516	630	1230.9		
			Note : THC still higher than prior to shutdown - continue purging									
			Note: Rotameters set at first test position. V1 and V2 @ 8 lpm.									
1/10/90 12:16	V3A	CO2/O2	DIRECT						3.2		17.7	20.9
1/10/90 12:17	V3B	CO2/O2	DIRECT						3.4		17.6	21.0
1/10/90 16:34	V1 disch	CO2/O2	DIRECT						3.2		17.8	21.0
1/10/90 16:40	V2 disch	CO2/O2	DIRECT						3.1		17.6	20.7
1/11/90 8:30	Standard check with atmospheric air								0.0		20.9	
	Standard check with 20.1% CO2/N2								20.0		0.0	
1/11/90 8:33	V1-1A	CO2/02	DIRECT						3.2		17.6	20.8
1/11/90 8:35	V1-1B	CO2/02	DIRECT						2.9		17.8	20.7
1/11/90 8:37	V1-1C	CO2/02	DIRECT						1.5		19	20.5
1/11/90 8:39	V1-2A	CO2/02	DIRECT						2.8		17.8	20.6
1/11/90 8:41	V1-2B	CO2/02	DIRECT						4.6		15.7	20.3
1/11/90 8:42	V1-2C	CO2/02	DIRECT						0.9		19.3	20.2

				CO2/THC DATA								O2 Data	
					Smpl			Dil.		Calc. Conc.	Gastech	
Date/Time	Sample		Smpl (Lt)		Flow	Dil. (Rt.)		Flow	Gastech-CO2 (%)	CO2 (%)	Reading	02+C02
m/d/y/ h:mm	Loc.	Anal.	Rotameter	G/S	cc/min	Rotameter	G/S	cc/min	SIP-THC (ppm)	THC (ppm)	O2 (%)	(%)
1/11/90 8:44	V1-3A	CO2/02	DIRECT						1.9		18.6	20.5
1/11/90 8:45	V1-3B	CO2/02	DIRECT						2.5		18.1	20.6
1/11/90 8:46	V1-3C	CO2/02	DIRECT						2.9		17.5	20.4
1/11/90 8:50	Standard check with atmospheric air								0.0		20.3	
1/11/90 8:55	Respanned										20.9	
1/11/90 9:02	V1 disch										18.1	
1/11/90 9:04	V1-1B										18	
1/11/90 9:06	V1-2B								2.8		18.2	21.0
1/11/90 9:08	V1-3B								1.9		19.2	21.1
1/11/90 9:08	Standard check with atmospheric air								0.0		20.9	
1/11/90 9:09	V2-1A	CO2/02	DIRECT						0.1		20.9	21.0
1/11/90 9:12	V2-1B	CO2/02	DIRECT						2.1		18.5	20.6
1/11/90 9:15	V2-1C	CO2/02	DIRECT						2.3		18.3	20.6
1/11/90 9:17	V2-2A	CO2/02	DIRECT						0.05		20.9	21.0
1/11/90 9:19	V2-2B	CO2/02	DIRECT						2.2		18.5	20.7
1/11/90 9:20	V2-2C	CO2/02	DIRECT						2.2		17.2	19.4
1/11/90 9:22	V2-3A	CO2/02	DIRECT						0.15		20.8	21.0
1/11/90 9:24	V2-3B	CO2/02	DIRECT						1.8		19	20.8
1/11/90 9:25	V2-3C	CO2/02	DIRECT						2.4		17.3	19.7
1/11/90 9:27	V2 disch	CO2/02	DIRECT						3		17.5	20.5
1/11/90 9:30	Standard check with atmospheric air								0.0		20.9	
1/12/90 7:50	Standard check with atmospheric air								0.0		20.9	
	Standard check with 20.1% CO2/N2								20.0		0.0	
	Standard check with 1005 ppm std. GC counts = 160											
1/12/90 8:12	V1-1A	CO2/02	DIRECT						3.3		17.8	21.1
1/12/90 8:35	V1-1B	CO2/02	DIRECT						3.2		17.7	20.9
1/12/90 8:38	V1-1C	CO2/02	DIRECT						3		17.8	20.8
1/12/90 8:40	V1-2A	CO2/02	DIRECT						1.5		19.4	20.9
1/12/90 8:42	V1-2B	CO2/02	DIRECT						2.8		18.1	20.9
1/12/90 8:44	V1-2C	CO2/02	DIRECT						4.5		16.1	20.6
1/12/90 8:50	V1-3A	CO2/02	DIRECT						0.7		20.2	20.9

				CO2/THC DATA							O2 Data	
					Smpl			Dil.		Calc. Conc.	Gastech	
Date/Time	Sample		Smpl (Lt)		Flow	Dil. (Rt.)		Flow	Gastech-CO2 (%)	CO2 (%)	Reading	02+C02
m/d/y/ h:mm	Loc.	Anal.	Rotameter	G/S	cc/min	Rotameter	G/S	cc/min	SIP-THC (ppm)	THC (ppm)	O2 (%)	(%)
1/12/90 8:52	V1-3B	CO2/02	DIRECT						2		18.5	20.5
1/12/90 8:54	V1-3C	CO2/02	DIRECT						2.8		17.4	20.2
1/12/90 8:55	V1 disch	CO2/02	DIRECT								17.8	
1/12/90 8:56	V1 disch	CO2/02	OPEN			CLOSED					17.8	
		THC	110	S	541	110	S	516	810	1582.6		
1/12/90 8:57	V2-1A	CO2/02	DIRECT						0.1		20.8	20.9
1/12/90 8:59	V2-1B	CO2/02	DIRECT						2.2		18.2	20.4
1/12/90 9:00	V2-1C	CO2/02	DIRECT						2.6		18	20.6
1/12/90 9:02	V2-2A	CO2/02	DIRECT						0.05		20.8	20.9
1/12/90 9:04	V2-2B	CO2/02	DIRECT						2.2		18.5	20.7
1/12/90 9:06	V2-2C	CO2/02	DIRECT						3.2		17.4	20.6
1/12/90 9:23	V2-3A	CO2/02	DIRECT						0.1		20.8	20.9
1/12/90 9:25	V2-3B	CO2/02	DIRECT						2		18.3	20.3
1/12/90 9:27	V2-3C	CO2/02	DIRECT						3.2		17.2	20.4
1/12/90 9:40	V2 disch	CO2/02	OPEN			CLOSED			3	3	17.5	20.5
		THC	110	S	541	110	S	516	900	1758.4		
1/12/90 10:05	V3 inlet	CO2/02	OPEN			CLOSED			3	3	17.6	20.6
		THC	110	S	541	110	S	516	765	1494.6		
	V3 disch	CO2/02	OPEN			CLOSED			2.8	2.8	17.7	
		THC	OPEN			CLOSED			950	950		
1/12/90 10:40	Standard check with atmospheric air								0.0		20.9	
	Standard check with 20.1% CO2/N2								20.0		0.0	
	Standard check with 1005 ppm std. - reading 1060 ppm											

				CO2/THC DATA								O2 Data	
					Smpl			Dil.			Calc. Conc.	Gastech	
Date/Time	Sample		Smpl (Lt)		Flow	Dil. (Rt.)		Flow	Gastech-CO2 (%)	CO2 (%)	Reading	02+C02
m/d/y/ h:mm	Loc.	Anal.	Rotameter	G/S	cc/min	Rotameter	G/S	cc/min	SIP-THC (ppm)	THC (ppm)	O2 (%)	(%)
1/16/90 10:00	Standard check with atmospheric air								0.0		20.9	
	Standard check with 5.1% CO2/N2								5.1		0.0	
	Standard check with 1005 ppm std. GC counts = 160											
1/16/90 10:00	V4 disch	CO2/02	OPEN			CLOSED			0.6	0.6	20.2	20.8
		THC	OPEN			CLOSED			ND	ND		
1/16/90 10:00	V3 disch	CO2/02	OPEN			CLOSED			3.3	3.3	17	20.3
		THC	OPEN			CLOSED			905	905		
1/16/90 10:00	V3 inlet	CO2/02	OPEN			CLOSED			3.3	3.3	17	20.3
		THC	110	S	541	110	S	516	1005	1963.6		
1/16/90 10:00	V2 disch	CO2/02	OPEN			CLOSED			3.6	3.6	16.2	19.8
		THC	90	S	400	110	S	516	900	2061.0		
1/16/90 10:00	V1 disch	CO2/02	OPEN			CLOSED			3.3	3.3	16.7	20.0
		THC	60	S	239	120	S	569	950	3211.7		
			Note: V1 THC appears to be in error. Disregard and use 1/17 data.									
1/17/90 12:00	Standard check with atmospheric air								0.0		20.9	
	Standard check with 5.12% CO2/N2								5.1		0.0	
	Standard check with 1005 ppm std. GC counts =150											
1/17/90 12:00	V1 disch	THC	60	S	239	120	S	569	625	2113.0		
1/17/90 12:00	V2 disch	THC	90	S	400	110	S	516	920	2106.8		
1/17/90 12:00	V3 disch	THC	OPEN			CLOSED			1150	1150		
1/17/90 12:00	V3 inlet	THC	110	S	541	110	S	516	1100	2149.2		
1/19/90 8:00	Standard check with atmospheric air								0.0		20.9	
	Standard check with 5.12% CO2/N2								5.1		0.0	
	Standard check with 1005 ppm std. - GC counts = 152											
1/19/90 8:00	V4 disch	CO2/02	OPEN			CLOSED			0.7	0.7	20.2	20.9
		THC	OPEN			CLOSED			2	2		
1/19/90 8:00	V3 disch	CO2/02	OPEN			CLOSED			4	4	16	20.0
		THC	OPEN			CLOSED			1080	1080		
1/19/90 8:00	V3 inlet	CO2/02	OPEN			CLOSED			4.2	4.2	15.9	20.1
		THC	110	S	541	110	S	516	760	1484.9		
1/19/90 8:00	V2 disch	CO2/02	OPEN			CLOSED			4.2	4.2	14.7	18.9
		THC	90	S	400	110	S	516	980	2244.2		

				CO2/THC DATA								O2 Data	
					Smpl			Dil.			Calc. Conc.	Gastech	
Date/Time	Sample		Smpl (Lt)		Flow	Dil. (Rt.)		Flow	Gastech-CO2 (%)		CO2 (%)	Reading	02+C02
m/d/y/ h:mm	Loc.	Anal.	Rotameter	G/S	cc/min	Rotameter	G/S	cc/min	SIP-THC (ppm)		THC (ppm)	O2 (%)	(%)
1/19/90 8:00	V1 disch	CO2/02	OPEN			CLOSED			4.1		4.1	15.8	19.9
		THC	60	S	239	120	S	569	500		1690.4		
1/19/90 8:00	NOTE : Water levels were measured at V1= 7.45', V2=7 4', V3=5.6'												
1/22/90 10:30	Standard check with atmospheric air								0.0			20.9	
1/22/90 10:30	Standard check with 5.12% CO2/N2								5.1			0.0	
1/22/90 10:30	Standard check with 1005 ppm std. - GC counts = 156												
1/22/90 10:30	V4 disch	CO2/02	OPEN			CLOSED			0.7		0.7	20.2	20.9
		THC	OPEN			CLOSED			ND		ND		
1/22/90 10:30	V3 disch	CO2/02	OPEN			CLOSED			4.5		4.5	15.2	19.7
		THC	OPEN			CLOSED			1000		1000		
1/22/90 10:30	V3 inlet	CO2/02	OPEN			CLOSED			4.9		4.9	15.5	20.4
		THC	110	S	541	110	S	516	915		1787.7		
1/22/90 10:30	V2 disch	CO2/02	OPEN			CLOSED			5.2		5.2	15.4	20.6
		THC	80	S	350	150	S	769	710		2270.0		
1/22/90 10:30	V1 disch	CO2/02	OPEN			CLOSED			4.8		4.8	15.5	20.3
		THC	80	S	350	150	S	769	570		1822.4		
1/22/90 10:30	NOTE : Water levels were measured at V1= 7.7', V2=7.5', V3=4.9'												
1/22/90 10:30	NOTE: This data used for second flow rate V1=4.22Lpm, V2= 4.32 Lpm												
1/23/90 8:30	Standard check with atmospheric air								0.0			20.9	
1/23/90 8:30	Standard check with 5.12% CO2/N2								5.1			0.0	
1/23/90 8:30	V3 disch	CO2/02	OPEN			CLOSED			4.2		4.2	15.9	20.1
1/23/90 8:30	V3 inlet	CO2/02	OPEN			CLOSED			4.8		4.8	15.5	20.3
1/23/90 8:30	V2 disch	CO2/02	OPEN			CLOSED			5		5	15	20.0
1/23/90 8:30	V1 disch	CO2/02	OPEN			CLOSED			4.9		4.9	15.2	20.1
1/24/90 14:00	Standard check with atmospheric air								0.0			20.9	
1/24/90 14:00	Standard check with 5.12% CO2/N2								5.1			0.0	
1/24/90 14:00	Standard check with 1005 ppm std. - GC counts = 153												
1/24/90 14:00	V4 disch	CO2/02	OPEN			CLOSED			0.7		0.7	20.2	20.9
		THC	OPEN			CLOSED			3.8		3.8		
1/24/90 14:00	V3 disch	CO2/02	OPEN			CLOSED			3.9		3.9	16.1	20.0
		THC	OPEN			CLOSED			1170		1170		

				CO2/THC DATA								O2 Data	
					Smpl			Dil.			Calc. Conc.	Gastech	
Date/Time	Sample		Smpl (Lt)		Flow	Dil. (Rt.)		Flow	Gastech-CO2 (%)	CO2 (%)	Reading	02+C02
m/d/y/ h:mm	Loc.	Anal.	Rotameter	G/S	cc/min	Rotameter	G/S	cc/min	SIP-THC (ppm)	THC (ppm)	O2 (%)	(%)
1/24/90 14:00	V3 inlet	CO2/02	OPEN			CLOSED			4.5	4.5	15.2	19.7
		THC	110	S	541	110	S	516	1175	2295.7		
1/24/90 14:00	V2 discl	CO2/02	OPEN			CLOSED			4.9	4.9	13.2	18.1
		THC	NOTE: Balls stuck on diluter									
1/25/90 6:00	V1-1B	CO2/02	Direct			Ambient		Off-gas	6.2		12.2	18.4
1/25/90 6:00	V1-2B	CO2/02	Direct			Temp °C		Temp°C	4.2		16	20.2
1/25/90 6:00	V1-3B	CO2/02	Direct			19.1			4.6		15.5	20.1
1/25/90 6:00	V2-1B	CO2/02	Direct						5.3		12.3	17.6
1/25/90 6:00	V2-2B	CO2/02	Direct						6.8		9.1	15.9
1/25/90 6:00	V2-3B	CO2/02	Direct						6		12.4	18.4
1/25/90 6:00	V1 disc	CO2/02	Direct					18.5				
1/25/90 6:10	V2 disc	CO2/02	Direct					18.5				
1/25/90 6:00	Blowers off for abbreviated shutdown test.											
1/25/90 7:10	V1-1B	CO2/02	Direct			19.1			6.3		12.1	18.4
1/25/90 7:10	V1-2B	CO2/02	Direct						4.3		15.8	20.1
1/25/90 7:10	V1-3B	CO2/02	Direct						4.7		15.2	19.9
1/25/90 7:10	V2-1B	CO2/02	Direct						6		11.5	17.5
1/25/90 7:10	V2-2B	CO2/02	Direct						6.5		9.2	15.7
1/25/90 7:10	V2-3B	CO2/02	Direct						6.1		12	18.1
1/25/90 8:15	V1-1B	CO2/02	Direct			20.3			6.2		12	18.2
1/25/90 8:17	V1-2B	CO2/02	Direct						4.4		15.3	19.7
1/25/90 8:19	V1-3B	CO2/02	Direct						4.7		15	19.7
1/25/90 8:22	V2-1B	CO2/02	Direct						6.1		11	17.1
1/25/90 8:24	V2-2B	CO2/02	Direct						6.5		9.3	15.8
1/25/90 8:26	V2-3B	CO2/02	Direct						6.1		11.8	17.9
1/25/90 9:15	V1-1B	CO2/02	Direct			23.7			6.2		12	18.2
1/25/90 9:17	V1-2B	CO2/02	Direct						4.5		15	19.5
1/25/90 9:19	V1-3B	CO2/02	Direct						4.7		14.8	19.5
1/25/90 9:21	V2-1B	CO2/02	Direct						6.2		10.3	16.5
1/25/90 9:23	V2-2B	CO2/02	Direct						6.5		9.1	15.6
1/25/90 9:25	V2-3B	CO2/02	Direct						6.2		11.4	17.6
1/25/90 9:55	V1-1B	CO2/02	Direct			24.9			6.2		11.9	18.1

				CO2/THC DATA								O2 Data	
					Smpl			Dil.		Calc. Conc.	Gastech	
Date/Time	Sample		Smpl (Lt)		Flow	Dil. (Rt.)		Flow	Gastech-CO2 (%)	CO2 (%)	Reading	02+C02
m/d/y/ h:mm	Loc.	Anal.	Rotameter	G/S	cc/min	Rotameter	G/S	cc/min	SIP-THC (ppm)	THC (ppm)	O2 (%)	(%)
1/25/90 9:58	V1-2B	CO2/02	Direct						4.4		14.9	19.3
1/25/90 10:00	V1-3B	CO2/02	Direct						4.8		14.5	19.3
1/25/90 10:02	V2-1B	CO2/02	Direct						6.3		10.1	16.4
1/25/90 10:04	V2-2B	CO2/02	Direct						6.5		9	15.5
1/25/90 10:06	V2-3B	CO2/02	Direct						6.2		11	17.2
1/25/90 10:37	V2 disc	CO2/02	Direct					18.6				
1/25/90 10:45	V1-1B	CO2/02	Direct			24.4			6.1		11.5	17.6
1/25/90 10:47	V1-2B	CO2/02	Direct						4.4		14.1	18.5
1/25/90 10:49	V1-3B	CO2/02	Direct						4.8		14	18.8
1/25/90 10:51	V2-1B	CO2/02	Direct						6.3		9.8	16.1
1/25/90 10:53	V2-2B	CO2/02	Direct						6.4		8.8	15.2
1/25/90 10:55	V2-3B	CO2/02	Direct						6.2		10.9	17.1
1/25/90 13:26	V1-1B	CO2/02	Direct			21.3			6.3		11.5	17.8
1/25/90 13:28	V1-2B	CO2/02	Direct						4.8		14.1	18.9
1/25/90 13:30	V1-3B	CO2/02	Direct						5		14	19.0
1/25/90 13:33	V2-1B	CO2/02	Direct						6.9		9	15.9
1/25/90 13:35	V2-2B	CO2/02	Direct						6.8		8.5	15.3
1/25/90 13:37	V2-3B	CO2/02	Direct						6.8		10.2	17.0
1/25/90 15:05	V1-1B	CO2/02	Direct						6.8		11.3	18.1
1/25/90 15:07	V1-2B	CO2/02	Direct						5.1		14	19.1
1/25/90 15:09	V1-3B	CO2/02	Direct						5.3		13.9	19.2
1/25/90 15:11	V2-1B	CO2/02	Direct						7.2		8.7	15.9
1/25/90 15:13	V2-2B	CO2/02	Direct						7.1		8	15.1
1/25/90 15:15	V2-3B	CO2/02	Direct						7.1		9.9	17.0
1/25/90 16:00	V1-1B	CO2/02	Direct						6.8		11.2	18.0
1/25/90 16:02	V1-2B	CO2/02	Direct						5.1		13.9	19.0
1/25/90 16:04	V1-3B	CO2/02	Direct			16.5			5.5		13.8	19.3
1/25/90 16:06	V2-1B	CO2/02	Direct						7.4		8.4	15.8
1/25/90 16:08	V2-2B	CO2/02	Direct						7.2		8	15.2
1/25/90 16:10	V2-3B	CO2/02	Direct						7.1		9.9	17.0
1/25/90 16:10	V1 disc	Temp°C	Direct					18.5				
1/25/90 23:00	V1-1B	CO2/02	Direct						7.2		10.2	17.4

				CO2/THC DATA								O2 Data	
					Smpl			Dil.			Calc. Conc.	Gastech	
Date/Time	Sample		Smpl (Lt)		Flow	Dil. (Rt.)		Flow	Gastech-CO2 (%)	CO2 (%)	Reading	02+C02
m/d/y/ h:mm	Loc.	Anal.	Rotameter	G/S	cc/min	Rotameter	G/S	cc/min	SIP-THC (ppm)	THC (ppm)	O2 (%)	(%)
1/25/90 23:02	V1-2B	CO2/02	Direct						6		12.5	18.5
1/25/90 23:04	V1-3B	CO2/02	Direct						6.3		12.6	18.9
1/25/90 23:06	V2-1B	CO2/02	Direct						8.5		6.5	15.0
1/25/90 23:08	V2-2B	CO2/02	Direct						8		6.3	14.3
1/25/90 23:10	V2-3B	CO2/02	Direct						7.9		8.1	16.0
1/25/90 23:15		Temp°C	Direct			9.4						
1/26/90 8:49		Temp°C	Direct			12.1						
1/26/90 8:50	V1-1B	CO2/02	Direct						7.2		9	16.2
1/26/90 8:52	V1-2B	CO2/02	Direct						6.2		10.9	17.1
1/26/90 8:55	V1-3B	CO2/02	Direct						6.5		11	17.5
1/26/90 8:57	V2-1B	CO2/02	Direct						8.9		4.3	13.2
1/26/90 8:59	V2-2B	CO2/02	Direct						8.1		4.3	12.4
1/26/90 9:00	V1 disch	Temp°C	Direct					18.8				
1/26/90 9:01	V2-3B	CO2/02	Direct						8.2		6.1	14.3
1/26/90 15:00	Blowers on for test 3, V1= 1.95 lpm, V2=2.03 lpm											
2/1/90 16:30	Standard check with atmospheric air								0.0		20.9	
2/1/90 16:30	Standard check with 5.12% CO2/N2								5.1		0.0	
2/1/90 16:30	Standard check with 1005 ppm std. - GC counts = 159											
2/1/90 16:30	V4 disch	CO2/02	OPEN			CLOSED			0.7	0.7	20.3	21.0
		THC	OPEN			CLOSED			1	1		
2/1/90 16:30	V3 disch	CO2/02	OPEN			CLOSED			5.6	5.6	13.8	19.4
		THC	OPEN			CLOSED			765	765		
2/1/90 16:30	V3 inlet	CO2/02	OPEN			CLOSED			6.8	6.8	12.1	18.9
		THC	110	S	541	110	S	516	875	1709.6		
2/1/90 16:30	V2 disch	CO2/02	OPEN			CLOSED			6.8	6.8	12	18.8
		THC	110	S	541	150	S	769	950	2300.4		
2/1/90 16:30	V1 disch	CO2/02	OPEN			CLOSED			7	7	12.2	19.2
		THC	110	S	541	110	S	516	990	1934.3		
2/1/90 16:30	NOTE : Water levels were measured at V1= 7.57', V2=7.52', V3=5.57'											
2/4/90 16:30	Standard check with atmospheric air								0.0		20.9	
2/4/90 16:30	Standard check with 5.12% CO2/N2								5.1		0.0	
2/4/90 16:30	Standard check with 1005 ppm std. - GC counts = 154											

				CO2/THC DATA								O2 Data	
					Smpl			Dil.			Calc. Conc.	Gastech	
Date/Time	Sample		Smpl (Lt)		Flow	Dil. (Rt.)		Flow	Gastech-CO2 (%)		CO2 (%)	Reading	02+C02
m/d/y/ h:mm	Loc.	Anal.	Rotameter	G/S	cc/min	Rotameter	G/S	cc/min	SIP-THC (ppm)		THC (ppm)	O2 (%)	(%)
2/4/90 16:30	V4 disch	CO2/02	OPEN			CLOSED			0.6		6	20.5	21.1
		THC	OPEN			CLOSED			3.8		3.8		
2/4/90 16:30	V3 disch	CO2/02	OPEN			CLOSED			6.7		6.7	12	18.7
		THC	OPEN			CLOSED			960		960		
2/4/90 16:30	V3 inlet	CO2/02	OPEN			CLOSED			8		8	10.5	18.5
		THC	110	S	541	110	S	516	890		1738.9		
2/4/90 16:30	V2 disch	CO2/02	OPEN			CLOSED			6.9		6.9	12.9	19.8
		THC	100	S	458	150	S	769	940		2518.3		
2/4/90 16:30	V1 disch	CO2/02	OPEN			CLOSED			8		8	10.8	18.8
		THC	110	S	541	110	S	516	1150		2246.9		
2/9/90 8:00	Standard check with atmospheric air								0.0			20.9	
2/9/90 8:00	Standard check with 5.12% CO2/N2								5.1			0.0	
2/9/90 8:00	Standard check with 1005 ppm std. - GC counts = 159												
2/9/90 8:00	V4 disch	CO2/02	OPEN			CLOSED			0.9		0.9	20	20.9
		THC	OPEN			CLOSED			2		2		
2/9/90 8:00	V3 disch	CO2/02	OPEN			CLOSED			6.6		6.6	11.7	18.3
		THC	OPEN			CLOSED			Flame out				
2/9/90 8:00	V3 inlet	CO2/02	OPEN			CLOSED			8		8	10.1	18.1
		THC	OPEN			CLOSED			Flame out				
2/9/90 8:00	V2 disch	CO2/02	OPEN			CLOSED			8.6		8.6	7.9	16.5
		THC	80	S	350	150	S	769	860		2749.5		
2/9/90 8:00	V1 disch	CO2/02	OPEN			CLOSED			8		8	10.2	18.2
		THC	110	S	541	150	S	769	965		2336.7		
2/9/90 8:00	NOTE : Water levels were measured at V1= 7.6', V2=7.62', V3=5.31'												
2/12/90 15:00	Standard check with atmospheric air								0.0			20.9	
2/12/90 15:00	Standard check with 5.12% CO2/N2								5.1			0.0	
2/12/90 15:00	Standard check with 1005 ppm std. - GC counts = 155												
2/12/90 15:00	V4 disch	CO2/02	OPEN			CLOSED			0.8		0.8	20.1	20.9
		THC	OPEN			CLOSED			ND		ND		
2/12/90 15:00	V3 disch	CO2/02	OPEN			CLOSED			7.4		7.4	10.7	18.1
		THC	110	S	541	110	S	516	145		283.3		

				CO2/THC DATA								O2 Data	
					Smpl			Dil.		Calc. Conc.	Gastech	
Date/Time	Sample		Smpl (Lt)		Flow	Dil. (Rt.)		Flow	Gastech-CO2 (%)	CO2 (%)	Reading	02+C02
m/d/y/ h:mm	Loc.	Anal.	Rotameter	G/S	cc/min	Rotameter	G/S	cc/min	SIP-THC (ppm)	THC (ppm)	O2 (%)	(%)
2/12/90 15:00	V3 inlet	CO2/02	OPEN			CLOSED			7.9	7.9	10.8	18.7
		THC	110	S	541	150	S	769	920	2227.7		
2/12/90 15:00	V2 disch	CO2/02	OPEN			CLOSED			9.1	9.1	7.9	17.0
		THC	80	S	350	150	S	769	900	2877.4		
2/12/90 15:00	V1 disch	CO2/02	OPEN			CLOSED			7.8	7.8	10.6	18.4
		THC	80	S	350	150	S	769	525	1678.5		
	Note: V3 inlet looks closer to stable value											
2/12/90 15:00	Note: Water level in V3 = 5.4'											
2/12/90 15:00	Note: Temp measured in V2 = 20.4°C= 69°F											
2/12/90 15:00	Note : Use this data for flow rate no. 3, V1=1.94lpm, V2=2.03 lpm											
2/12/90 15:00	V1-1A	O2	DIRECT								8	
2/12/90 15:00	V1-1B	O2	DIRECT								6.2	
2/12/90 15:00	V1-1C	O2	DIRECT								5.6	
2/12/90 15:00	V1-2A	O2	DIRECT								13.2	
2/12/90 15:00	V1-2B	O2	DIRECT								11.4	
2/12/90 15:00	V1-2C	O2	DIRECT								9.8	
2/12/90 15:00	V1-3A	O2	DIRECT								14.4	
2/12/90 15:00	V1-3B	O2	DIRECT								11.1	
2/12/90 15:00	V1-3C.	O2	DIRECT								9.8	
2/12/90 15:00	V1 AVG	O2	DIRECT								**9.9**	
2/12/90 15:00	V2-1A	O2	DIRECT								13.5	
2/12/90 15:00	V2-1B	O2	DIRECT								5.5	
2/12/90 15:00	V2-1C	O2	DIRECT								4.0	
2/12/90 15:00	V2-2A	O2	DIRECT								17.4	
2/12/90 15:00	V2-2B	O2	DIRECT								3.1	
2/12/90 15:00	V2-2C	O2	DIRECT								0.5	
2/12/90 15:00	V2-3A	O2	DIRECT								13.3	
2/12/90 15:00	V2-3B	O2	DIRECT								6.0	
2/12/90 15:00	V2-3C	O2	DIRECT								1.9	
2/12/90 15:00	V2 AVG	O2	DIRECT								**7.2**	
2/12/90 15:00	V3A	O2	DIRECT								10.1	
2/12/90 15:00	V3B	O2	DIRECT								9.8	

				CO2/THC DATA								O2 Data	
					Smpl			Dil.			Calc. Conc.	Gastech	
Date/Time	Sample		Smpl (Lt)		Flow	Dil. (Rt.)		Flow	Gastech-CO2 (%)		CO2 (%)	Reading	02+C02
m/d/y/ h:mm	Loc.	Anal.	Rotameter	G/S	cc/min	Rotameter	G/S	cc/min	SIP-THC (ppm)		THC (ppm)	O2 (%)	(%)
2/12/90 15:00	V3C	O2	DIRECT									9.6	
2/12/90 15:00	V3 AVG	O2	DIRECT									9.8	
2/13/90 14:00	Note: flow changed to setting 4 , V1= 1.14Lpm, V2= 1.08 lpm												
2/21/90 8:00	Standard check with atmospheric air								0.0			20.9	
2/21/90 8:00	Standard check with 5.12% CO2/N2								5.1			0.0	
2/21/90 8:00	Standard check with 1005 ppm std. - GC counts = 157												
2/21/90 8:00	V4 disch	CO2/02	OPEN			CLOSED			0.6		0.6	20.2	20.8
		THC	OPEN			CLOSED			1.8		1.8		
2/21/90 8:00	V3 disch	CO2/02	OPEN			CLOSED			9.5		9.5	5.3	14.8
		THC	110	S	541	110	S	516	13		25.4		
2/21/90 3:00	V3 inlet	CO2/02	OPEN			CLOSED			9.6		9.6	6.5	16.1
		THC	110	S	541	150	S	769	755		1828.2		
2/21/90 8:00	V2 disch	CO2/02	OPEN			CLOSED			6.7		6.7	11.8	18.5
		THC	80	S	350	150	S	769	760		2429.8		
2/21/90 8:00	V1 disch	CO2/02	OPEN			CLOSED			9.4		9.4	6.9	16.3
		THC	80	S	350	150	S	769	590		1886.3		
	Note: water trap from V3 full of water and V3 rotameter also full. Trap emptied and rotameter cleaned.												
2/24/90 10:30	Standard check with atmospheric air								0.0			20.9	
2/24/90 10:30	Standard check with 5.12% CO2/N2								5.1			0.0	
2/24/90 10:30	Standard check with 1005 ppm std. - GC counts = 167												
2/24/90 10:30	V4 disch	CO2/02	OPEN			CLOSED			0.3		0.3	20.5	20.8
		THC	OPEN			CLOSED			1.5		1.5		
2/24/90 10:30	V3 disch	CO2/02	OPEN			CLOSED			6.7		6.7	11.8	18.5
		THC	OPEN			CLOSED			20		20.0		
2/24/90 10:30	V3 inlet	CO2/02	OPEN			CLOSED			8.5		8.5	9.2	17.7
		THC	110	S	541	150	S	769	810		1961.4		
2/24/90 10:30	V2 disch	CO2/02	OPEN			CLOSED			6		6	13	19.0
		THC	80	S	350	150	S	769	640		2046.2		
2/24/90 10:30	V1 disch	CO2/02	OPEN			CLOSED			8.5		8.5	8.9	17.4
		THC	110	S	541	150	S	769	1050		2542.5		

				CO2/THC DATA								O2 Data	
					Smpl			Dil.			Calc. Conc.	Gastech	
Date/Time	Sample		Smpl (Lt)		Flow	Dil. (Rt.)		Flow	Gastech-CO2 (%)	CO2 (%)	Reading	02+C02
m/d/y/ h:mm	Loc.	Anal.	Rotameter	G/S	cc/min	Rotameter	G/S	cc/min	SIP-THC (ppm)	THC (ppm)	O2 (%)	(%)
2/28/90 10:00	Standard check with atmospheric air								0.0		20.9	
2/28/90 10:00	Standard check with 5.12% CO2/N2								5.1		0.0	
2/28/90 10:00	Standard check with 1005 ppm std. - GC counts = 157											
2/28/90 10:00	V4 disch	CO2/02	OPEN			CLOSED			0.7	0.7	20.2	20.9
		THC	OPEN			CLOSED			4.3	4.3		
2/28/90 10:00	V3 disch	CO2/02	OPEN			CLOSED			6.3	6.3	12	18.3
		THC	OPEN			CLOSED			56	56.0		
2/28/90 10:00	V3 inlet	CO2/02	OPEN			CLOSED			7.3	7.3	10.3	17.6
		THC	110	S	541	110	S	516	1215	2373.9		
2/28/90 10:00	V2 disch	CO2/02	OPEN			CLOSED			6.1	6.1	12	18.1
		THC	110	S	541	150	S	769	870	2106.7		
2/28/90 10:00	V1 disch	CO2/02	OPEN			CLOSED			7.3	7.3	10.2	17.5
		THC	110	S	541	150	S	769	765	1852.4		
3/1/90 8:00	Standard check with atmospheric air								0.0		20.9	
3/1/90 8:00	Standard check with 5.12% CO2/N2								5.1		0.0	
3/1/90 8:00	V1-1A	O2	DIRECT								3.1	
3/1/90 8:00	V1-1B	O2	DIRECT								3.3	
3/1/90 8:00	V1-1C	O2	DIRECT								3.3	
3/1/90 8:00	V1-2A	O2	DIRECT								8.8	
3/1/90 8:00	V1-2B	O2	DIRECT								8.3	
3/1/90 8:00	V1-2C	O2	DIRECT								7.1	
3/1/90 8:00	V1-3A	O2	DIRECT								11	
3/1/90 8:00	V1-3B	O2	DIRECT								9.5	
3/1/90 8:00	V1-3C	O2	DIRECT								9	
3/1/90 8:00	V2-1A	O2	DIRECT								16.9	
3/1/90 8:00	V2-1B	O2	DIRECT								9.1	
3/1/90 8:00	V2-1C	O2	DIRECT								9.5	
3/1/90 8:00	V2-2A	O2	DIRECT								9.8	
3/1/90 8:00	V2-2B	O2	DIRECT								11	
3/1/90 8:00	V2-2C	O2	DIRECT								8.5	
3/1/90 8:00	V2-3A	O2	DIRECT								15.2	
3/1/90 8:00	V2-3B	O2	DIRECT								11.8	

				CO2/THC DATA								O2 Data	
					Smpl			Dil.			Calc. Conc.	Gastech	
Date/Time	Sample		Smpl (Lt)		Flow	Dil. (Rt.)		Flow	Gastech-CO2 (%)	CO2 (%)	Reading	02+C02
m/d/y/ h:mm	Loc.	Anal.	Rotameter	G/S	cc/min	Rotameter	G/S	cc/min	SIP-THC (ppm)	THC (ppm)	O2 (%)	(%)
3/1/90 8:00	V2-3C	O2	DIRECT								9.2	
3/1/90 8:00	V3A	O2	DIRECT								13.2	
3/1/90 8:00	V3B	O2	DIRECT								13.5	
3/1/90 8:00	V3C	O2	DIRECT								13	
3/1/90 0:00	Note: Water in instrument at V2-2C. Subsequent measurements may be in error.											
3/1/90 16:30	Note: Flow rates increased to, V1 = 4.22 LPM, V2 = 4.32 LPM.											
3/3/90 9:30	Standard check with atmospheric air								0.0		20.9	
3/3/90 9:30	Standard check with 5.12% CO2/N2								5.1		0.0	
3/3/90 9:30	Standard check with 505 ppm std. - GC counts = 70											
3/3/90 9:52	V4A	CO2/02	DIRECT						0.5		20.5	21.0
3/3/90 9:54	V4B	CO2/02	DIRECT						0.6		20.3	20.9
3/3/90 9:56	V4C	CO2/02	DIRECT						0.7		20.2	20.9
3/3/90 9:58	V4 disch	CO2/02	DIRECT						0.6		20.3	20.9
3/3/90 10:00	V3A	CO2/02	DIRECT						5.4		14.7	20.1
3/3/90 10:02	V3B	CO2/02	DIRECT						5.8		14.2	20.0
3/3/90 10:04	V3C	CO2/02	DIRECT						6		14.1	20.1
3/3/90 10:06	V3 disch	CO2/02	DIRECT						5.3		14.8	20.1
3/3/90 10:08	V3 inlet	CO2/02	DIRECT						4.9		15.2	20.1
3/3/90 10:22	V4A	CO2/02	OPEN			CLOSED			0.5	0.5	20.5	21.0
		THC	OPEN			CLOSED			2	2		
3/3/90 10:25	V4B	CO2/02	OPEN			CLOSED			0.6	0.6	20.4	21.0
		THC	OPEN			CLOSED			2	2		
3/3/90 10:28	V4C	CO2/02	OPEN			CLOSED			0.7	0.7	20.2	20.9
		THC	OPEN			CLOSED			1	1		
3/3/90 10:32	V4 disch	CO2/02	OPEN			CLOSED			0.6	0.6	20.3	20.9
		THC	OPEN			CLOSED			1	1		
3/3/90 10:35	V3 disch	CO2/02	OPEN			CLOSED			5.1	5.1	15	20.1
		THC	OPEN			CLOSED			290	290		
3/3/90 10:40	V3A	CO2/02	OPEN			CLOSED			5.25	5.25	14.9	20.2
		THC	OPEN			CLOSED			45	45		
3/3/90 10:50	V3B	CO2/02	OPEN			CLOSED			5.5	5.5	14.4	19.9
		THC	OPEN			CLOSED			258	258		

				CO2/THC DATA								O2 Data	
						Smpl			Dil.		Calc. Conc.	Gastech	
Date/Time		Sample		Smpl (Lt)		Flow	Dil. (Rt.)		Flow	Gastech-CO2 (%)	CO2 (%)	Reading	02+C02
m/d/y/	h:mm	Loc.	Anal.	Rotameter	G/S	cc/min	Rotameter	G/S	cc/min	SIP-THC (ppm)	THC (ppm)	O2 (%)	(%)
3/3/90	10:53	V3C	CO2/02	OPEN			CLOSED			5.7	5.7	14.3	20.0
			THC	OPEN			CLOSED			170	170		
3/3/90	11:00	V3 inlet	CO2/02	OPEN			CLOSED			4.7	4.7	15.5	20.2
			THC	110	S	541	110	S	516	580	1133.2		
3/3/90	11:06	Blower to V3 and V4 off for shutdown test 4											
3/3/90	11:20	V2 disc	CO2/02	OPEN			CLOSED			4.7	4.7	15.2	19.9
			THC	80	S	350	150	S	769	585	1870.3		
3/3/90	11:25	V1 disc	CO2/02	OPEN			CLOSED			4.8	4.8	15.3	20.1
			THC	110	S	541	150	S	769	615	1489.2		
3/3/90	11:30	Standard check with atmospheric air								0.0		20.9	
3/3/90	11:30	Standard check with 5.12% CO2/N2								5.1		0.0	
3/3/90	11:30	Standard check with 505 ppm std.								505.0			
3/3/90	13:10	Standard check with atmospheric air								0.0		20.9	
3/3/90	13:10	Standard check with 5.12% CO2/N2								5.1		0.0	
3/3/90	13:24	V3A	CO2/02	DIRECT						5.2		14.9	20.1
3/3/90	13:26	V3B	CO2/02	DIRECT						5.7		14.3	20.0
3/3/90	13:28	V3C	CO2/02	DIRECT						5.8		14.2	20.0
3/3/90	13:30	V4A	CO2/02	DIRECT						0.6		20.4	21.0
3/3/90	13:32	V4B	CO2/02	DIRECT						0.7		20.3	21.0
3/3/90	13:34	V4C	CO2/02	DIRECT						0.7		20.2	20.9
3/3/90	13:38	Standard check with atmospheric air								0.0		20.9	
3/3/90	13:38	Standard check with 5.12% CO2/N2								5.1		0.0	
3/3/90	16:35	Standard check with atmospheric air								0.0		20.9	
3/3/90	16:35	Standard check with 5.12% CO2/N2								5.1		0.0	
3/3/90	16:38	V3A	CO2/02	DIRECT						5.25		15	20.3
3/3/90	16:40	V3B	CO2/02	DIRECT						5.7		14.5	20.2
3/3/90	16:42	V3C	CO2/02	DIRECT						5.7		14.5	20.2
3/3/90	16:44	V4A	CO2/02	DIRECT						0.6		20.5	21.1
3/3/90	16:46	V4B	CO2/02	DIRECT						0.7		20.3	21.0
3/3/90	16:48	V4C	CO2/02	DIRECT						0.75		20.3	21.1
3/3/90	16:50	Standard check with atmospheric air								0.0		20.9	
3/3/90	16:50	Standard check with 5.12% CO2/N2								5.1		0.0	

				CO2/THC DATA								O2 Data	
					Smpl			Dil.			Calc. Conc.	Gastech	
Date/Time	Sample		Smpl (Lt)		Flow	Dil. (Rt.)		Flow	Gastech-CO2 (%)	CO2 (%)	Reading	02+C02
m/d/y/ h:mm	Loc.	Anal.	Rotameter	G/S	cc/min	Rotameter	G/S	cc/min	SIP-THC (ppm)	THC (ppm)	O2 (%)	(%)
3/4/90 9:40	Standard check with atmospheric air								0.0		20.9	
3/4/90 9:40	Standard check with 5.12% CO2/N2								5.1		0.0	
3/4/90 9:46	V3A	CO2/02	DIRECT						5.1		14.4	19.5
3/4/90 9:48	V3B	CO2/02	DIRECT						5.3		14.1	19.4
3/4/90 9:50	V3C	CO2/02	DIRECT						5.4		14	19.4
3/4/90 9:53	V4A	CO2/02	DIRECT						0.8		20	20.8
3/4/90 9:55	V4B	CO2/02	DIRECT						0.8		20	20.8
3/4/90 9:57	V4C	CO2/02	DIRECT						0.8		20	20.8
3/4/90 10:03	V1 disc	CO2/02	DIRECT						4.2		16.1	20.3
3/4/90 10:07	V2 disc	CO2/02	DIRECT						4.5		14.5	19.0
3/4/90 10:10	Standard check with atmospheric air								0.0		20.9	
3/4/90 10:10	Standard check with 5.12% CO2/N2								5.1		0.0	
3/4/90 17:15	Standard check with atmospheric air								0.0		20.9	
3/4/90 17:15	Standard check with 5.12% CO2/N2								5.1		0.0	
3/4/90 17:23	V3A	CO2/02	DIRECT						5.2		14.4	19.6
3/4/90 17:25	V3B	CO2/02	DIRECT						5.4		14.1	19.5
3/4/90 17:27	V3C	CO2/02	DIRECT						5.4		14.1	19.5
3/4/90 17:29	V4A	CO2/02	DIRECT						0.9		20	20.9
3/4/90 17:31	V4B	CO2/02	DIRECT						0.9		20	20.9
3/4/90 17:33	V4C	CO2/02	DIRECT						0.9		20	20.9
3/4/90 17:35	Standard check with atmospheric air								0.0		20.9	
3/4/90 17:35	Standard check with 5.12% CO2/N2								5.1		0.0	
3/5/90 8:09	Standard check with atmospheric air								0.0		20.9	
3/5/90 8:09	Standard check with 5.12% CO2/N2								5.1		0.0	
3/5/90 8:13	V3A	CO2/02	DIRECT						5		14.3	19.3
3/5/90 8:16	V3B	CO2/02	DIRECT						5.1		14.1	19.2
3/5/90 8:18	V3C	CO2/02	DIRECT						5.2		14	19.2
3/5/90 8:23	V4A	CO2/02	DIRECT						1		19.5	20.5
3/5/90 8:25	V4B	CO2/02	DIRECT						1		19.5	20.5
3/5/90 8:27	V4C	CO2/02	DIRECT						1		19.5	20.5
3/5/90 8:30	V2 disc	CO2/02	DIRECT						4.8		13.5	18.3
3/5/90 8:34	V1 disc	CO2/02	DIRECT						4.1		15.8	19.9

				CO2/THC DATA								O2 Data	
					Smpl			Dil.			Calc. Conc.	Gastech	
Date/Time	Sample		Smpl (Lt)		Flow	Dil. (Rt.)		Flow	Gastech-CO2 (%)		CO2 (%)	Reading	02+C02
m/d/y/ h:mm	Loc.	Anal.	Rotameter	G/S	cc/min	Rotameter	G/S	cc/min	SIP-THC (ppm)		THC (ppm)	O2 (%)	(%)
3/5/90 9:00	V1 disch	CO2/02	DIRECT		Taken with low range instrumer				4.2			15.3	19.5
3/5/90 9:02	V2 disch	CO2/02	DIRECT		Taken with low range instrumer				5			13	18.0
3/5/90 9:10	Standard check with atmospheric air								0.0			20.9	
3/5/90 9:10	Standard check with 5.12% CO2/N2								5.1			0.0	
3/5/90 16:45	Standard check with atmospheric air								0.0			20.9	
3/5/90 16:45	Standard check with 5.12% CO2/N2								5.1			0.0	
3/5/90 16:48	V3A	CO2/02	DIRECT						5.1			14.2	19.3
3/5/90 16:50	V3B	CO2/02	DIRECT						5.1			14.1	19.2
3/5/90 16:52	V3C	CO2/02	DIRECT						5.2			14.1	19.3
3/5/90 16:54	V4A	CO2/02	DIRECT						1.1			19.5	20.6
3/5/90 16:56	V4B	CO2/02	DIRECT						1.1			19.5	20.6
3/5/90 16:58	V4C	CO2/02	DIRECT						1.1			19.4	20.5
3/5/90 17:00	Standard check with atmospheric air								0.0			20.9	
3/5/90 17:00	Standard check with 5.12% CO2/N2								5.1			0.0	
3/6/90 10:15	Standard check with atmospheric air								0.0			20.9	
3/6/90 10:15	Standard check with 5.12% CO2/N2								5.1			0.0	
3/6/90 10:17	V3A	CO2/02	DIRECT						5			14.1	19.1
3/6/90 10:19	V3B	CO2/02	DIRECT						5.1			13.9	19.0
3/6/90 10:21	V3C	CO2/02	DIRECT						6.4			12	18.4
3/6/90 10:24	V4A	CO2/02	DIRECT						1.2			19.2	20.4
3/6/90 10:26	V4B	CO2/02	DIRECT						1.2			19.2	20.4
3/6/90 10:28	V4C	CO2/02	DIRECT						1.2			19.2	20.4
3/6/90 10:34	V2 disch	CO2/02	DIRECT						5.1			12.8	17.9
3/6/90 10:36	V1 disch	CO2/02	DIRECT						4.1			15.7	19.8
3/6/90 10:37	Standard check with atmospheric air								0.0			20.9	
3/6/90 10:37	Standard check with 5.12% CO2/N2								5.1			0.0	
3/6/90 10:56	Standard check with 505 ppm std. - GC counts = 67												
3/6/90 11:00	Note: Turned on dewatering system.												
3/6/90 12:30	V3 inle	THC	50	G	54	150	S	769	700.0		10668.5		
	Note: HC to V3 from air sparged JP-4.												
3/6/90 18:11	V3 inle	THC	50	G	54	150	S	769	700.0		10668.5		

				CO2/THC DATA								O2 Data	
					Smpl			Dil.			Calc. Conc.	Gastech	
Date/Time	Sample		Smpl (Lt)		Flow	Dil. (Rt.)		Flow	Gastech-CO2 (%)		CO2 (%)	Reading	02+C02
m/d/y/ h:mm	Loc.	Anal.	Rotameter	G/S	cc/min	Rotameter	G/S	cc/min	SIP-THC (ppm)		THC (ppm)	O2 (%)	(%)
3/7/90 9:08	Standard check with atmospheric air								0.0			20.9	
3/7/90 9:08	Standard check with 5.12% CO2/N2								5.1			0.0	
3/7/90 9:08	Standard check with 505 ppm std. - GC counts = 66												
3/7/90 11:00	V1 disch	CO2/02	DIRECT						4.2			15.2	19.4
3/7/90 11:02	V2 disch	CO2/02	DIRECT						6.3			13.9	20.2
3/7/90 11:05	V3 inlet	CO2/02	DIRECT						0.2			20.6	20.8
		THC	50	G	54	150	S	769	700		10668.5		
3/7/90 11:07	V3 disch	CO2/02	DIRECT						2.8			17.8	20.6
		THC	80	S	350	150	S	769	680		2174.1		
3/7/90 11:26	V1-1A	CO2/02	OPEN			CLOSED			5.8		5.8	13	18.8
		THC	80	S	350	150	S	769	800		2557.7		
3/7/90 11:34	V1-1B	CO2/02	OPEN			CLOSED			4.8		4.8	13.4	18.2
		THC	50	S	169	150	S	769	640		3552.2		
3/7/90 11:39	V1-1C	CO2/02	OPEN			CLOSED			6.8		6.8	11	17.8
		THC	50	S	169	150	S	769	390		2164.6		
3/7/90 11:49	V1 disch	CO2/02	OPEN			CLOSED			4.1		4.1	15.6	19.7
		THC	110	S	541	150	S	769	640		1549.7		
3/7/90 11:53	V2 disch	CO2/02	OPEN			CLOSED			4.9		4.9	14.2	19.1
		THC	50	S	169	150	S	769	340		1887.1		
3/7/90 13:54	V3 inlet	CO2/02	OPEN			CLOSED			0.5		0.5	20.1	20.6
		THC	50	G	54	150	S	769	700		10668.5		
3/7/90 14:00	V3 disch	CO2/02	OPEN			CLOSED			2.6		2.6	17.8	20.4
		THC	80	S	350	150	S	769	690		2206.0		
3/7/90 14:14	V3A	CO2/02	OPEN			CLOSED			3.5		3.5	17	20.5
		THC	OPEN			CLOSED			480		480		
3/7/90 14:19	V3B	CO2/02	OPEN			CLOSED			3.5		3.5	16.8	20.3
		THC	110	S	541	150	S	769	470		1138.1		
3/7/90 14:25	V3C	CO2/02	OPEN			CLOSED			3.8		3.8	16.8	20.6
		THC	150	S	777	150	S	769	338		672.5		
3/7/90 14:30	Standard check with atmospheric air								0.0			20.9	
3/7/90 14:30	Standard check with 5.12% CO2/N2								5.1			0.0	
3/7/90 14:30	Standard check with 505 ppm std.												

				CO2/THC DATA								O2 Data	
					Smpl			Dil.		Calc. Conc.	Gastech	
Date/Time	Sample		Smpl (Lt)		Flow	Dil. (Rt.)		Flow	Gastech-CO2 (%)	CO2 (%)	Reading	02+C02
m/d/y/ h:mm	Loc.	Anal.	Rotameter	G/S	cc/min	Rotameter	G/S	cc/min	SIP-THC (ppm)	THC (ppm)	O2 (%)	(%)
3/8/90 8:30	Standard check with atmospheric air								0.0		20.9	
3/8/90 8:30	Standard check with 5.12% CO2/N2								5.1		0.0	
3/8/90 8:30	Standard check with 505 ppm std. GC Counts = 66.											
3/8/90 9:00	V1 disch	CO2/02	OPEN			CLOSED			4.5	4.5	15.3	19.8
		THC	110	S	541	150	S	769	565	1368.1		
		Note: Collected canister sample and isotopic analysis sample.										
3/8/90 9:25	V2 disch	CO2/02	OPEN			CLOSED			4.7	4.7	15	19.7
		THC	80	S	350	150	S	769	680	2174.1		
		Note: Collected canister sample and isotopic analysis sample.										
3/8/90 9:46	V1-1A	CO2/02	OPEN			CLOSED			5.8	5.8	13.5	19.3
		THC	80	S	350	150	S	769	780	2493.8		
		Note: Collected isotopic analysis sample.										
3/8/90 9:59	V1-1B	CO2/02	OPEN			CLOSED			6.5	6.5	11.8	18.3
		THC	50	S	169	150	S	769	670	3718.7		
3/8/90 10:07	V1-1C	CO2/02	OPEN			CLOSED			7.1	7.1	11	18.1
		THC	50	S	169	150	S	769	420	2331.1		
3/8/90 10:20	V1-2A	CO2/02	OPEN			CLOSED			3.4	3.4	16.8	20.2
		THC	110	S	541	110	S	516	465	908.5		
3/8/90 10:27	V1-2B	CO2/02	OPEN			CLOSED			4.5	4.5	15	19.5
		THC	110	S	541	150	S	769	625	1513.4		
3/8/90 10:32	V1-2C	CO2/02	OPEN			CLOSED			4.8	4.8	14.7	19.5
		THC	80	S	350	150	S	769	550	1758.4		
3/8/90 10:37	V1-3A	CO2/02	OPEN			CLOSED			1.8	1.8	18.3	20.1
		THC	OPEN			CLOSED			200	200		
3/8/90 10:42	V1-3B	CO2/02	OPEN			CLOSED			4.8	4.8	14.2	19.0
		THC	110	S	541	150	S	769	760	1840.3		
3/8/90 10:45	V1-3C	CO2/02	OPEN			CLOSED			6.2	6.2	12.4	18.6
		THC	110	S	541	150	S	769	445	1077.5		
3/8/90 10:49	V2-1A	CO2/02	OPEN			CLOSED			0.6	0.6	20.3	20.9
		THC	OPEN			CLOSED			60	60		
3/8/90 10:53	V2-1B	CO2/02	OPEN			CLOSED			4.8	4.8	14.3	19.1
		THC	110	S	541	150	S	769	665	1610.3		

				CO2/THC DATA								O2 Data	
					Smpl			Dil.			Calc. Conc.	Gastech	
Date/Time	Sample		Smpl (Lt)		Flow	Dil. (Rt.)		Flow	Gastech-CO2 (%)		CO2 (%)	Reading	02+C02
m/d/y/ h:mm	Loc.	Anal.	Rotameter	G/S	cc/min	Rotameter	G/S	cc/min	SIP-THC (ppm)		THC (ppm)	O2 (%)	(%)
3/8/90 10:57	V2-1C	CO2/02	OPEN			CLOSED			5.8		5.8	12.9	18.7
		THC	80	G	122	150	S	769	760		5550.5		
3/8/90 11:00	V2-2A	CO2/02	OPEN			CLOSED			0.1		0.1	20.8	20.9
		THC	OPEN			CLOSED			60		60		
3/8/90 11:05	V2-2B	CO2/02	OPEN			CLOSED			4.1		4.1	16.1	20.2
		THC	80	S	350	150	S	769	760		2429.8		
3/8/90 11:10	V2-2C	CO2/02	OPEN			CLOSED			6		6	13.6	19.6
		THC	80	G	122	150	S	769	700		5112.3		
3/8/90 11:15	V2-3A	CO2/02	OPEN			CLOSED			0.5		0.5	20.5	21.0
		THC	OPEN			CLOSED			115		115		
3/8/90 11:19	V2-3B	CO2/02	OPEN			CLOSED			4.5		4.5	15.1	19.6
		THC	110	S	541	150	S	769	475		1150.2		
3/8/90 11:23	V2-3C	CO2/02	OPEN			CLOSED			6.8		6.8	12.1	18.9
		THC	80	G	122	150	S	769	455		3323.0		
3/8/90 11:35	Blowers for V1 and V2 off for shutdown test 4. Dewatering system also off.												
3/8/90 11:45	V3 inlet	CO2/02	DIRECT						0.6			20.2	20.8
		THC	50	G	54	150	S	769	480		7315.6		
3/8/90 11:50	V3 disc	CO2/02	DIRECT						2.5		2.5	17.8	20.3
		THC	80	S	350	150	S	769	380		1214.9		
3/8/90 12:30	Standard check with atmospheric air								0.0			20.9	
3/8/90 12:30	Standard check with 5.12% CO2/N2								5.1			0.0	
3/8/90 12:30	Standard check with 505 ppm std.												
3/8/90 13:42	V1-1A	CO2/02	DIRECT						6			12.9	18.9
3/8/90 13:44	V1-1B	CO2/02	DIRECT						6.8			11.6	18.4
3/8/90 13:46	V1-1C	CO2/02	DIRECT						7.4			10.7	18.1
3/8/90 13:48	V1-2A	CO2/02	DIRECT						4			15.3	19.3
3/8/90 13:50	V1-2B	CO2/02	DIRECT						4.8			14.4	19.2
3/8/90 13:52	V1-2C	CO2/02	DIRECT						5.8			13.2	19.0
3/8/90 13:54	V1-3A	CO2/02	DIRECT						3			16.1	19.1
3/8/90 13:56	V1-3B	CO2/02	DIRECT						5.1			13.6	18.7
3/8/90 13:58	V1-3C	CO2/02	DIRECT						6.4			12.2	18.6

				CO2/THC DATA								O2 Data	
					Smpl			Dil.			Calc. Conc.	Gastech	
Date/Time	Sample		Smpl (Lt)		Flow	Dil. (Rt.)		Flow	Gastech-CO2 (%)	CO2 (%)	Reading	02+C02
m/d/y/ h:mm	Loc.	Anal.	Rotameter	G/S	cc/min	Rotameter	G/S	cc/min	SIP-THC (ppm)	THC (ppm)	O2 (%)	(%)
3/8/90 14:04	V2-1A	CO2/02	DIRECT						1.1		18.8	19.9
3/8/90 14:06	V2-1B	CO2/02	DIRECT						5 4		12.7	18.1
3/8/90 14:08	V2-1C	CO2/02	DIRECT						6.1		12.4	18.5
3/8/90 14:10	V2-2A	CO2/02	DIRECT						0.2		20.2	20.4
3/8/90 14:12	V2-2B	CO2/02	DIRECT						4.4		15.2	19.6
3/8/90 14:16	V2-2C	CO2/02	DIRECT						6.5		12.6	19.1
3/8/90 14:18	V2-3A	CO2/02	DIRECT						1.3		18.2	19.5
3/8/90 14:20	V2-3B	CO2/02	DIRECT						4.9		13.9	18.8
3/8/90 14:22	V2-3C	CO2/02	DIRECT						6.6		12.1	18.7
3/8/90 15:12	V3 disc	CO2/02	DIRECT						2.6		17.7	20.3
		THC	80	S	350	150	S	769	340	1087.0		
3/8/90 15:26	V3 inle	CO2/02	DIRECT						0.5		20.5	21.0
		THC	50	G	54	150	S	769	540	8230.0		
3/8/90 17:08	V1-1A	CO2/02	DIRECT						6.7		11	17.7
3/8/90 17:13	V1-1B	CO2/02	DIRECT						7.2		11	18.2
3/8/90 17:15	V1-1C	CO2/02	DIRECT						7.7		10.2	17.9
3/8/90 17:17	V1-2A	CO2/02	DIRECT						4.7		13.2	17.9
3/8/90 17:19	V1-2B	CO2/02	DIRECT						5.4		13.6	19.0
3/8/90 17:21	V1-2C	CO2/02	DIRECT						6.3		12.7	19.0
3/8/90 17:23	V1-3A	CO2/02	DIRECT						4		14.2	18.2
3/8/90 17:25	V1-3B	CO2/02	DIRECT						5.8		13	18.8
3/8/90 17:27	V1-3C	CO2/02	DIRECT						6.7		12	18.7
3/8/90 17:30	V2-1A	CO2/02	DIRECT						1.9		17.8	19.7
3/8/90 17:35	V2-1B	CO2/02	DIRECT						6.5		11.4	17.9
3/8/90 17:45	V2-1C	CO2/02	DIRECT						6.5		12.1	18.6
3/8/90 17:47	V2-2A	CO2/02	DIRECT						0.6		19.3	19.9
3/8/90 17:49	V2-2B	CO2/02	DIRECT						5		14.1	19.1
3/8/90 17:52	V2-2C	CO2/02	DIRECT						7		11.8	18.8
3/8/90 17:54	V2-3A	CO2/02	DIRECT						2.3		16.5	18.8
3/8/90 17:56	V2-3B	CO2/02	DIRECT						5.6		13	18.6
3/8/90 17:58	V2-3C	CO2/02	DIRECT						7.2		11	18.2
3/8/90 18:00	Standard check with 505 ppm std. GC Counts = 66.											

				CO2/THC DATA								O2 Data	
					Smpl			Dil.			Calc. Conc.	Gastech	
Date/Time	Sample		Smpl (Lt)		Flow	Dil. (Rt.)		Flow	Gastech-CO2 (%)	CO2 (%)	Reading	02+C02
m/d/y/ h:mm	Loc.	Anal.	Rotameter	G/S	cc/min	Rotameter	G/S	cc/min	SIP-THC (ppm)	THC (ppm)	O2 (%)	(%)
3/8/90 18:02	V3 inle	CO2/02	DIRECT						0.6		20.3	20.9
		THC	50	G	54	150	S	769	500	7620.4		
3/8/90 18:08	V3 disc	CO2/02	DIRECT						2.7		17.8	20.5
		THC	80	S	350	150	S	769	315	1007.1		
3/8/90 18:46	Standard check with atmospheric air								0.0		20.9	
3/8/90 18:46	Standard check with 5.12% CO2/N2								5.1		0.0	
3/8/90 18:46	Standard check with 505 ppm std.								505.0			
3/8/90 21:50	Standard check with atmospheric air								0.0		20.9	
3/8/90 21:50	Standard check with 5.12% CO2/N2								5.1		0.0	
3/8/90 21:50	Standard check with 505 ppm std.								505.0			
3/8/90 21:57	V3 inle	CO2/02	DIRECT						0.4		20.6	21.0
		THC	50	G	54	150	S	769	500	7620.4		
3/8/90 22:00	V3 disc	CO2/02	DIRECT						2.7		17.8	20.5
		THC	80	S	350	150	S	769	280	895.2		
3/8/90 22:16	V1-1A	CO2/02	DIRECT						7.4		9	16.4
3/8/90 22:18	V1-1B	CO2/02	DIRECT						7.6		10.2	17.8
3/8/90 22:20	V1-1C	CO2/02	DIRECT						8		10	18.0
3/8/90 22:24	V1-2A	CO2/02	DIRECT						5.6		11.2	16.8
3/8/90 22:26	V1-2B	CO2/02	DIRECT						6		12.4	18.4
3/8/90 22:28	V1-2C	CO2/02	DIRECT						6.6		12.2	18.8
3/8/90 22:30	V1-3A	CO2/02	DIRECT						5		12.4	17.4
3/8/90 22:34	V1-3B	CO2/02	DIRECT						6.3		12.1	18.4
3/8/90 22:36	V1-3C	CO2/02	DIRECT						7		11.5	18.5
3/8/90 22:38	V2-1A	CO2/02	DIRECT						2.6		16.1	18.7
3/8/90 22:40	V2-1B	CO2/02	DIRECT						7.2		9.9	17.1
3/8/90 22:42	V2-1C	CO2/02	DIRECT						6.8		11.2	18.0
3/8/90 22:44	V2-2A	CO2/02	DIRECT						1		18.2	19.2
3/8/90 22:46	V2-2B	CO2/02	DIRECT						5.8		12.7	18.5
3/8/90 22:48	V2-2C	CO2/02	DIRECT						7.3		10.7	18.0
3/8/90 22:50	V2-3A	CO2/02	DIRECT						3.1		15	18.1
3/8/90 22:52	V2-3B	CO2/02	DIRECT						6.2		11.8	18.0
3/8/90 22:54	V2-3C	CO2/02	DIRECT						7.5		10	17.5

				CO2/THC DATA								O2 Data	
					Smpl			Dil.		Calc. Conc.	Gastech	
Date/Time	Sample		Smpl (Lt)		Flow	Dil. (Rt.)		Flow	Gastech-CO2 (%)	CO2 (%)	Reading	02+C02
m/d/y/ h:mm	Loc.	Anal.	Rotameter	G/S	cc/min	Rotameter	G/S	cc/min	SIP-THC (ppm)	THC (ppm)	O2 (%)	(%)
3/8/90 23:15	V3 disc	CO2/02	DIRECT						2.7		17.8	20.5
		THC	80	S	350	150	S	769	280	895.2		
3/8/90 23:20	V3 inle	CO2/02	DIRECT						0.7		20.3	21.0
		THC	50	G	54	150	S	769	470	7163.1		
	NOTE: Collected canister and isotopic samples in V3 and V4.											
3/8/90 23:30	Standard check with atmospheric air								0.0		20.9	
3/8/90 23:30	Standard check with 5.12% CO2/N2								5.1		0.0	
3/8/90 23:30	Standard check with 505 ppm std.								520.0			
3/9/90 7:40	Standard check with atmospheric air								0.0		20.9	
3/9/90 7:40	Standard check with 5.12% CO2/N2								5.1		0.0	
3/9/90 7:40	Standard check with 505 ppm std.								505.0			
3/9/90 7:44	V1-1A	CO2/02	DIRECT						8.2		6.2	14.4
3/9/90 7:46	V1-1B	CO2/02	DIRECT						7.8		8.5	16.3
3/9/90 7:48	V1-1C	CO2/02	DIRECT						8.2		8.5	16.7
3/9/90 7:50	V1-2A	CO2/02	DIRECT						6.6		8.2	14.8
3/9/90 7:52	V1-2B	CO2/02	DIRECT						6.6		10.2	16.8
3/9/90 7:54	V1-2C	CO2/02	DIRECT						6.9		10.3	17.2
3/9/90 7:58	V1-3A	CO2/02	DIRECT						6.1		9.9	16.0
3/9/90 8:00	V1-3B	CO2/02	DIRECT						6.9		10.1	17.0
3/9/90 8:02	V1-3C	CO2/02	DIRECT						7.3		9.9	17.2
3/9/90 8:06	V2-1A	CO2/02	DIRECT						3.3		14.1	17.4
3/9/90 8:08	V2-1B	CO2/02	DIRECT						8.3		6.9	15.2
3/9/90 8:10	V2-1C	CO2/02	DIRECT						7.3		9.2	16.5
3/9/90 8:24	V2-2A	CO2/02	DIRECT						1.9		15.7	17.6
3/9/90 8:26	V2-2B	CO2/02	DIRECT						6.7		9.3	16.0
3/9/90 8:28	V2-2C	CO2/02	DIRECT						7.8		7.8	15.6
3/9/90 8:34	V2-3A	CO2/02	DIRECT						4.2		12	16.2
3/9/90 8:36	V2-3B	CO2/02	DIRECT						7.1		9.4	16.5
3/9/90 8:38	V2-3C	CO2/02	DIRECT						8.2		7.5	15.7
3/9/90 8:50	V3 inlet	CO2/02	DIRECT						0.6		20.4	21.0
		THC	50	G	54	150	S	769	520	7925.2		

				CO2/THC DATA								O2 Data	
					Smpl				Dil.		Calc. Conc.	Gastech	
Date/Time	Sample		Smpl (Lt)		Flow	Dil. (Rt.)		Flow	Gastech-CO2 (%)	CO2 (%)	Reading	02+C02
m/d/y/ h:mm	Loc.	Anal.	Rotameter	G/S	cc/min	Rotameter	G/S	cc/min	SIP-THC (ppm)	THC (ppm)	O2 (%)	(%)
3/9/90 8:55	V3 disch	CO2/02	DIRECT						2.7		17.5	20.2
		THC	80	S	350	150	S	769	280	895.2		
3/9/90 9:00	V3A	CO2/02	DIRECT						2.8		17.3	20.1
		THC	OPEN			CLOSED			40	40		
3/9/90 9:05	V3B	CO2/02	DIRECT						2.9		17.2	20.1
		THC	OPEN			CLOSED			65	65		
3/9/90 9:10	V3C	CO2/02	DIRECT						2		17.2	19.2
		THC	OPEN			CLOSED			30	30		
3/9/90 9:20	Blower for V3 off for shutdown test 4A											
3/9/90 11:30	V3 disch	CO2/02	DIRECT						2.5		17.3	19.8
		THC	80	S	350	150	S	769	225	719.4		
3/9/90 11:35	V3A	CO2/02	DIRECT						2.7		17.2	19.9
		THC	OPEN			CLOSED			40	40		
3/9/90 11:40	V3B	CO2/02	DIRECT						2.8		17.2	20.0
		THC	OPEN			CLOSED			50	50		
3/9/90 11:45	V3C	CO2/02	DIRECT						2.8		17.1	19.9
		THC	OPEN			CLOSED			34	34		
3/9/90 11:50	Standard check with 505 ppm std.								480.0			
3/9/90 15:48	Standard check with atmospheric air								0.0		20.9	
3/9/90 15:48	Standard check with 5.12% CO2/N2								5.1		0.0	
3/9/90 15:48	Standard check with 505 ppm std.								505.0			
3/9/90 16:01	V1-1A	CO2/02	DIRECT						9.2		4.1	13.3
3/9/90 16:04	V1-1B	CO2/02	DIRECT						8.3		6.8	15.1
3/9/90 16:07	V1-1C	CO2/02	DIRECT						8.6		7.1	15.7
3/9/90 16:10	V1-2A	CO2/02	DIRECT						7.4		6.2	13.6
3/9/90 16:12	V1-2B	CO2/02	DIRECT						7.3		8.2	15.5
3/9/90 16:14	V1-2C	CO2/02	DIRECT						7.4		8.6	16.0
3/9/90 16:16	V1-3A	CO2/02	DIRECT						7		7.8	14.8
3/9/90 16:18	V1-3B	CO2/02	DIRECT						7.4		8.5	15.9
3/9/90 16:20	V1-3C	CO2/02	DIRECT						7.8		8.3	16.1
3/9/90 16:22	V2-1A	CO2/02	DIRECT						4.3		12.2	16.5

				CO2/THC DATA								O2 Data	
						Smpl			Dil.		Calc. Conc.	Gastech	
Date/Time	Sample		Smpl (Lt)		Flow	Dil. (Rt.)		Flow	Gastech-CO2 (%)	CO2 (%)	Reading	02+C02
m/d/y/ h:mm	Loc.	Anal.	Rotameter	G/S	cc/min	Rotameter	G/S	cc/min	SIP-THC (ppm)	THC (ppm)	O2 (%)	(%)
3/9/90 16:24	V2-1B	CO2/02	DIRECT						9.4		4.7	14.1
3/9/90 16:26	V2-1C	CO2/02	DIRECT						8.2		7.2	15.4
3/9/90 16:28	V2-2A	CO2/02	DIRECT						3.1		13.2	16.3
3/9/90 16:30	V2-2B	CO2/02	DIRECT						7.7		7	14.7
3/9/90 16:32	V2-2C	CO2/02	DIRECT						8.9		5.2	14.1
3/9/90 16:34	V2-3A	CO2/02	DIRECT						5.6		9.8	15.4
3/9/90 16:36	V2-3B	CO2/02	DIRECT						8		7.5	15.5
3/9/90 16:38	V2-3C	CO2/02	DIRECT						9.4		5.5	14.9
3/9/90 16:40	V3 disch	CO2/02	OPEN			CLOSED			2.9		17.3	20.2
		THC	OPEN			CLOSED			654	654.0		
3/9/90 16:50	V3A	CO2/02	OPEN			CLOSED			3.1		17.3	20.4
		THC	OPEN			CLOSED			37	37		
3/9/90 17:00	V3B	CO2/02	OPEN			CLOSED			3.1		17.2	20.3
		THC	OPEN			CLOSED			31	31		
3/9/90 17:10	V3C	CO2/02	OPEN			CLOSED			3.1		17.2	20.3
		THC	OPEN			CLOSED			40	40		
3/9/90 17:15	Standard check with atmospheric air								0.0		20.9	
3/9/90 17:15	Standard check with 5.12% CO2/N2								5.1		0.0	
3/9/90 17:15	Standard check with 505 ppm std.								505.0			
3/10/90 6:30	Standard check with atmospheric air								0.0		20.9	
3/10/90 6:30	Standard check with 5.12% CO2/N2								5.1		0.0	
3/10/90 6:30	Standard check with 505 ppm std.								505.0			
3/10/90 6:42	V1-1A	CO2/02	DIRECT						11		0.8	11.8
3/10/90 6:44	V1-1B	CO2/02	DIRECT						9.8		3.7	13.5
3/10/90 6:46	V1-1C	CO2/02	DIRECT						9.8		4.1	13.9
3/10/90 6:48	V1-2A	CO2/02	DIRECT						9.4		2.3	11.7
3/10/90 6:50	V1-2B	CO2/02	DIRECT						8.8		4.6	13.4
3/10/90 6:52	V1-2C	CO2/02	DIRECT						8.8		5.2	14.0
3/10/90 6:54	V1-3A	CO2/02	DIRECT						8.7		4.2	12.9
3/10/90 6:56	V1-3B	CO2/02	DIRECT						8.9		5.4	14.3
3/10/90 6:58	V1-3C	CO2/02	DIRECT						9		5.3	14.3
3/10/90 7:06	V2-1A	CO2/02	DIRECT						5.5		9	14.5

				CO2/THC DATA								O2 Data	
					Smpl			Dil.		Calc. Conc.	Gastech	
Date/Time	Sample		Smpl (Lt)		Flow	Dil. (Rt.)		Flow	Gastech-CO2 (%)	CO2 (%)	Reading	02+C02
m/d/y/ h:mm	Loc.	Anal.	Rotameter	G/S	cc/min	Rotameter	G/S	cc/min	SIP-THC (ppm)	THC (ppm)	O2 (%)	(%)
3/10/90 7:08	V2-1B	CO2/02	DIRECT						10.8		2.3	13.1
3/10/90 7:10	V2-1C	CO2/02	DIRECT						9.5		4	13.5
3/10/90 7:12	V2-2A	CO2/02	DIRECT						4.4		9.2	13.6
3/10/90 7:14	V2-2B	CO2/02	DIRECT						9.5		2.5	12.0
3/10/90 7:16	V2-2C	CO2/02	DIRECT						10.3		1	11.3
3/10/90 7:20	V2-3A	CO2/02	DIRECT						7		6.4	13.4
3/10/90 7:22	V2-3B	CO2/02	DIRECT						9.5		4.2	13.7
3/10/90 7:24	V2-3C	CO2/02	DIRECT						10.8		2.2	13.0
3/10/90 7:35	V3 disch	CO2/02	OPEN			CLOSED			3.2		16.5	19.7
		THC	OPEN			CLOSED			95	95.0		
3/10/90 7:40	V3A	CO2/02	OPEN			CLOSED			3.1		16.5	19.6
		THC	OPEN			CLOSED			7	7		
3/10/90 7:45	V3B	CO2/02	OPEN			CLOSED			3.2		16.4	19.6
		THC	OPEN			CLOSED			6	6		
3/10/90 7:50	V3C	CO2/02	OPEN			CLOSED			3.2		16.4	19.6
		THC	OPEN			CLOSED			10	10		
3/10/90 8:00	Standard check with atmospheric air								0.0		20.9	
3/10/90 8:00	Standard check with 5.12% CO2/N2								5.1		0.0	
3/10/90 8:00	Standard check with 505 ppm std.								505.0			
3/10/90 17:20	Standard check with atmospheric air								0.0		20.9	
3/10/90 17:20	Standard check with 5.12% CO2/N2								5.1		0.0	
3/10/90 17:20	Standard check with 505 ppm std.								505.0			
3/10/90 17:30	V1-1B	CO2/02	DIRECT						10.4		1.9	12.3
3/10/90 17:32	V1-1C	CO2/02	DIRECT						10.4		2.2	12.6
3/10/90 17:34	V1-2A	CO2/02	DIRECT						10.5		0.6	11.1
3/10/90 17:36	V1-2B	CO2/02	DIRECT						9.7		2.4	12.1
3/10/90 17:38	V1-2C	CO2/02	DIRECT						9.5		3	12.5
3/10/90 17:40	V1-3A	CO2/02	DIRECT						9.8		2.8	12.6
3/10/90 17:44	V1-3B	CO2/02	DIRECT						9.8		3.4	13.2
3/10/90 17:46	V1-3C	CO2/02	DIRECT						9.9		3.3	13.2
3/10/90 17:48	V2-1A	CO2/02	DIRECT						6.8		7.8	14.6
3/10/90 17:50	V2-1B	CO2/02	DIRECT						11.3		1.4	12.7

				CO2/THC DATA								O2 Data	
						Smpl			Dil.		Calc. Conc.	Gastech	
Date/Time		Sample		Smpl (Lt)		Flow	Dil. (Rt.)		Flow	Gastech-CO2 (%)	CO2 (%)	Reading	02+C02
m/d/y/	h:mm	Loc.	Anal.	Rotameter	G/S	cc/min	Rotameter	G/S	cc/min	SIP-THC (ppm)	THC (ppm)	O2 (%)	(%)
3/10/90	17:52	V2-1C	CO2/02	DIRECT						10.5		2.3	12.8
3/10/90	17:54	V2-2A	CO2/02	DIRECT						6.3		6.5	12.8
3/10/90	17:56	V2-2B	CO2/02	DIRECT						10.5		0.7	11.2
3/10/90	17:58	V2-2C	CO2/02	DIRECT						11.1		0	11.1
3/10/90	18:00	V2-3A	CO2/02	DIRECT						8.6		4.2	12.8
3/10/90	18:02	V2-3B	CO2/02	DIRECT						10.6		2.4	13.0
3/10/90	18:04	V2-3C	CO2/02	DIRECT						11.8		0.4	12.2
3/10/90	18:05	Note: Turned on blowers to V1 and V2. Flow rates, V1 = 4.22 LPM, V2 = 4.32 LPM. Nutrients to V1 @ 20 cc/min.											
3/10/90	18:15	V3 disch	CO2/02	OPEN			CLOSED			3.4		15.9	19.3
			THC	OPEN			CLOSED			32	32.0		
3/10/90	18:20	V3A	CO2/02	OPEN			CLOSED			3.4		16.1	19.5
			THC	OPEN			CLOSED			0	0		
3/10/90	18:25	V3B	CO2/02	OPEN			CLOSED			3.3		15.9	19.2
			THC	OPEN			CLOSED			2	2		
3/10/90	18:30	V3C	CO2/02	OPEN			CLOSED			3.3		16	19.3
			THC	OPEN			CLOSED			2	2		
3/10/90	18:40	V1 disch	CO2/02	DIRECT						8.8		4.9	13.7
			THC	110	S	541	150	S	769	850	2058.2		
3/10/90	18:45	V2 disch	CO2/02	DIRECT						9.8		3.1	12.9
			THC	80	S	350	150	S	769	960.0	3069.3		
3/10/90	18:55	Standard check with atmospheric air								0.0		20.9	
3/10/90	18:55	Standard check with 5.12% CO2/N2								5.1		0.0	
3/10/90	18:55	Standard check with 505 ppm std.								500.0			
3/11/90	2:50	Standard check with atmospheric air								0.0		20.9	
3/11/90	2:50	Standard check with 5.12% CO2/N2								5.1		0.0	
3/11/90	2:50	Standard check with 505 ppm std.								505.0			
3/11/90	3:00	V3 disch	CO2/02	DIRECT						3.5		15.3	18.8
			THC	DIRECT						22			
3/11/90	3:05	V3A	CO2/02	DIRECT						3.4		15.5	18.9
			THC	DIRECT						1			
3/11/90	3:10	V3B	CO2/02	DIRECT						3.5		15.3	18.8
			THC	DIRECT						2			

				CO2/THC DATA								O2 Data	
					Smpl				Dil.		Calc. Conc.	Gastech	
Date/Time	Sample		Smpl (Lt)		Flow	Dil. (Rt.)			Flow	Gastech-CO2 (%)	CO2 (%)	Reading	02+C02
m/d/y/ h:mm	Loc.	Anal.	Rotameter	G/S	cc/min	Rotameter	G/S		cc/min	SIP-THC (ppm)	THC (ppm)	O2 (%)	(%)
3/11/90 3:15	V3C	CO2/02	DIRECT							3.5		15.4	18.9
		THC	DIRECT							1			
3/11/90 3:24	Standard check with atmospheric air									0.0		20.9	
3/11/90 3:24	Standard check with 5.12% CO2/N2									5.1		0.0	
3/11/90 3:24	Standard check with 505 ppm std.									505.0			
3/11/90 17:45	Standard check with atmospheric air									0.0		20.9	
3/11/90 17:45	Standard check with 5.12% CO2/N2									5.1		0.0	
3/11/90 17:45	Standard check with 505 ppm std.									505.0			
3/11/90 17:53	V3 disch	CO2/02	DIRECT							3.8		14.7	18.5
		THC	DIRECT							7			
3/11/90 18:10	V3A	CO2/02	DIRECT							3.8		14.9	18.7
		THC	DIRECT							0			
3/11/90 18:15	V3B	CO2/02	DIRECT							3.8		14.8	18.6
		THC	DIRECT							2			
3/11/90 18:20	V3C	CO2/02	DIRECT							3.8		14.9	18.7
		THC	DIRECT							1			
3/11/90 18:25	V1 disch	CO2/02	DIRECT							6.8		12.5	19.3
		THC	110	S	541	150	S		769	540	1307.6		
3/11/90 18:30	V2 disch	CO2/02	DIRECT							7.7		10.1	17.8
		THC	80	S	350	150	S		769	730.0	2333.9		
3/11/90 18:35	Standard check with atmospheric air									0.0		20.9	
3/11/90 18:35	Standard check with 5.12% CO2/N2									5.1		0.0	
3/11/90 18:35	Standard check with 505 ppm std.									502.0			
3/11/90 18:35	Standard check with atmospheric air									0.0		20.9	
3/11/90 18:35	Standard check with 5.12% CO2/N2									5.1		0.0	
3/12/90 8:00	Standard check with 505 ppm std.									505.0			
3/12/90 8:15	V3 disch	CO2/02	DIRECT							3.9		14.3	18.2
		THC	DIRECT							8			
3/12/90 8:25	V3A	CO2/02	DIRECT							3.8		14.4	18.2
		THC	DIRECT							1			
3/12/90 8:30	V3B	CO2/02	DIRECT							3.8		14.2	18.0
		THC	DIRECT							3			

				CO2/THC DATA								O2 Data	
					Smpl			Dil.			Calc. Conc.	Gastech	
Date/Time	Sample		Smpl (Lt)		Flow	Dil. (Rt.)		Flow	Gastech-CO2 (%)		CO2 (%)	Reading	02+C02
m/d/y/ h:mm	Loc.	Anal.	Rotameter	G/S	cc/min	Rotameter	G/S	cc/min	SIP-THC (ppm)		THC (ppm)	O2 (%)	(%)
3/12/90 8:35	V3C	CO2/02	DIRECT						3.8			14.2	18.0
		THC	DIRECT						2				
3/12/90 8:45	V1 disch	CO2/02	DIRECT						6.4			12.8	19.2
		THC	110	S	541	150	S	769	800		1937.2		
3/12/90 8:55	V2 disch	CO2/02	DIRECT						7.2			10.7	17.9
		THC	80	S	350	150	S	769	870.0		2781.5		
3/12/90 9:00	Standard check with atmospheric air								0.0			20.9	
3/12/90 9:00	Standard check with 5.12% CO2/N2								5.1			0.0	
3/12/90 9:00	Standard check with 505 ppm std.								480.0				
3/12/90 9:15	Note: Started blower to V3. Flowrate = .67 LPM.												
3/12/90 10:00	Note: Ambient Temp = 25.9°C; V1-1 @4' =21.5°C; @ 2' = 22.5°C; V2-1 @ 4'=21.7°C; @ 2' = 22.3°C.												
3/13/90 7:40	Standard check with atmospheric air								0.0			20.9	
3/13/90 7:40	Standard check with 5.12% CO2/N2								5.1			0.0	
3/13/90 7:40	Standard check with 505 ppm std. GC Counts = 65.								505.0				
3/13/90 7:48	V4 disch	CO2/02	DIRECT						1.1			19.8	20.9
		THC	DIRECT						ND				
3/13/90 7:53	V3 disch	CO2/02	DIRECT						2.2			16.3	18.5
		THC	DIRECT						6				
3/13/90 8:00	V1 disch	CO2/02	DIRECT						6			13.4	19.4
		THC	110	S	541	150	S	769	875		2118.8		
3/13/90 8:10	V2 disch	CO2/02	DIRECT						6.8			11.2	18.0
		THC	80	S	350	150	S	769	825		2637.6		
	Note: V3 inlet is Atmospheric air since 3/12												

			CO2/THC DATA								O2 Data	
					Smpl			Dil.		Calc. Conc.	Gastech	
Date/Time	Sample		Smpl (Lt)		Flow	Dil. (Rt.)		Flow	Gastech-CO2 (%)	CO2 (%)	Reading	02+C02
m/d/y/ h:mm	Loc.	Anal.	Rotameter	G/S	cc/min	Rotameter	G/S	cc/min	SIP-THC (ppm)	THC (ppm)	O2 (%)	(%)
3/13/90 8:10	Standard check with atmospheric air								0.0		20.9	
3/13/90 8:10	Standard check with 5.12% CO2/N2								5.1		0.0	
3/13/90 8:10	Standard check with 505 ppm std.								505.0			
3/20/90 9:00	Standard check with atmospheric air								0.0		20.9	
3/20/90 9:00	Standard check with 5.12% CO2/N2								5.1		0.0	
3/20/90 9:00	V1 disc	CO2/02	DIRECT						4.2		16	20.2
3/20/90 9:00	V2 disc	CO2/02	DIRECT						4.8		15	19.8
3/20/90 9:00	V3 disc	CO2/02	DIRECT						1.2		19.5	20.7
3/20/90 9:00	V4 disc	CO2/02	DIRECT						0.3		20.5	20.8
3/25/90 8:30	Standard check with atmospheric air								0.0		20.9	
3/25/90 8:30	Standard check with 5.12% CO2/N2								5.1		0.0	
3/25/90 8:30	Standard check with 505 ppm std. GC Counts = 63.								505.0			
3/25/90 8:30	V4 disc	CO2/02	DIRECT						1		20	21.0
		THC	DIRECT						0.8			
3/25/90 8:30	V3 disc	CO2/02	DIRECT						1.5		19	20.5
		THC	DIRECT						2.4			
3/25/90 8:30	V2 disc	CO2/02	DIRECT						4.6		14.8	19.4
		THC	80	S	350	150	S	769	660	2110.1		
3/25/90 8:30	V1 disc	CO2/02	DIRECT						4.6		14.5	19.1
		THC	80	S	350	150	S	769	460	1470.7		
3/30/90 8:30	Standard check with atmospheric air								0.0		20.9	
3/30/90 8:30	Standard check with 5.12% CO2/N2								5.1		0.0	
3/30/90 8:30	Standard check with 505 ppm std. GC Counts = 56.								505.0			
3/30/90 8:30	V4 disc	CO2/02	DIRECT						1		20	21.0
		THC	OPEN			CLOSED			0.9			
3/30/90 8:30	V3 disc	CO2/02	DIRECT						1.8		19	20.8
		THC	OPEN			CLOSED			1.8			
3/30/90 8:30	V2 disc	CO2/02	DIRECT						5.9		12.5	18.4
		THC	80	S	350	150	S	769	700	2238.0		

				CO2/THC DATA								O2 Data	
					Smpl			Dil.			Calc. Conc.	Gastech	
Date/Time	Sample		Smpl (Lt)		Flow	Dil. (Rt.)		Flow	Gastech-CO2 (%)		CO2 (%)	Reading	02+C02
m/d/y/ h:mm	Loc.	Anal.	Rotameter	G/S	cc/min	Rotameter	G/S	cc/min	SIP-THC (ppm)		THC (ppm)	O2 (%)	(%)
3/30/90 8:30	V1 disc	CO2/02	DIRECT						5.9			13.2	19.1
		THC	80	S	350	150	S	769	425		1358.8		
4/9/90 10:00	Standard check with atmospheric air								0.0			20.9	
4/9/90 10:00	Standard check with 5.12% CO2/N2								5.1			0.0	
4/9/90 10:00	Standard check with 505 ppm std. GC Counts = 59.								505.0				
4/9/90 10:00	V4 disc	CO2/02	DIRECT						0.8			20.1	20.9
		THC	OPEN			CLOSED			1.7				
4/9/90 10:00	V3 disc	CO2/02	DIRECT						1.4			19.1	20.5
		THC	OPEN			CLOSED			2.5				
4/9/90 10:00	V2 disc	CO2/02	DIRECT						5			14.7	19.7
		THC	80	S	350	150	S	769	615		1966.2		
4/9/90 10:00	V1 disc	CO2/02	DIRECT						4.7			15	19.7
		THC	80	S	350	150	S	769	425		1358.8		
4/13/90 9:30	Standard check with atmospheric air								0.0			20.9	
4/13/90 9:30	Standard check with 5.12% CO2/N2								5.1			0.0	
4/13/90 9:30	Standard check with 505 ppm std. GC Counts = 62.								505.0				
4/13/90 9:30	V4 disc	CO2/02	DIRECT						0.8			20	20.8
		THC	OPEN			CLOSED			2.5		2.5		
4/13/90 9:30	V3 disc	CO2/02	DIRECT						1.3			19.2	20.5
		THC	OPEN			CLOSED			2.5		2.5		
4/13/90 9:30	V2 disc	CO2/02	DIRECT						4.9			13.8	18.7
		THC	80	S	350	150	S	769	650		2078.1		
4/13/90 9:30	V1 disc	CO2/02	DIRECT						4.6			15.2	19.8
		THC	80	S	350	150	S	769	500		1598.6		
4/24/90 9:00	Standard check with atmospheric air								0.0			20.9	
4/24/90 9:00	Standard check with 5.12% CO2/N2								5.1			0.0	
4/24/90 9:00	Standard check with 505 ppm std. GC Counts = 53.								505.0				
4/24/90 9:06	V1-1A	CO2/02	DIRECT						9.1			7.7	16.8
		THC	50	S	169	150	S	769	530		2941.7		

				CO2/THC DATA							O2 Data	
					Smpl			Dil.		Calc. Conc.	Gastech	
Date/Time	Sample		Smpl (Lt)		Flow	Dil. (Rt.)		Flow	Gastech-CO2 (%)	CO2 (%)	Reading	02+C02
m/d/y/ h:mm	Loc.	Anal.	Rotameter	G/S	cc/min	Rotameter	G/S	cc/min	SIP-THC (ppm)	THC (ppm)	O2 (%)	(%)
4/24/90 9:08	V1-1B	CO2/02	DIRECT						9.4		7.6	17.0
		THC	80	G	122	150	S	769	550	4016.8		
4/24/90 9:10	V1-1C	CO2/02	DIRECT						9.6		7.5	17.1
		THC	80	G	122	150	S	769	385	2811.8		
4/24/90 9:12	V1-2A	CO2/02	DIRECT						5.6		13.3	18.9
		THC	110	S	541	110	S	516	525	1025.7		
4/24/90 9:14	V1-2B	CO2/02	DIRECT						6.3		12.1	18.4
		THC	80	S	350	150	S	769	555	1774.4		
4/24/90 9:16	V1-2C	CO2/02	DIRECT						7.7		10.2	17.9
		THC	50	S	169	150	S	769	340	1887.1		
4/24/90 9:18	V1-3A	CO2/02	DIRECT						4.6		14.2	18.8
		THC	OPEN			CLOSED			475	475		
4/24/90 9:20	V1-3B	CO2/02	DIRECT						7.5		10.5	18.0
		THC	50	S	169	150	S	769	400	2220.1		
4/24/90 9:22	V1-3C	CO2/02	DIRECT						8		10	18.0
		THC	110	S	541	150	S	769	600	1452.9		
4/24/90 9:26	V1 disch	CO2/02	DIRECT						6.1		12.7	18.8
		THC	80	S	350	150	S	769	500	1598.6		
4/24/90 9:30	V2-1A	CO2/02	DIRECT						1.7		18.5	20.2
		THC	OPEN			CLOSED			50	50		
4/24/90 9:32	V2-1B	CO2/02	DIRECT						7.8		9.2	17.0
		THC	80	S	350	150	S	769	600	1918.3		
4/24/90 9:34	V2-1C	CO2/02	DIRECT						9.9		6.2	16.1
		THC	50	G	54	150	S	769	398	6065.8		
4/24/90 9:36	V2-2A	CO2/02	DIRECT						0.6		20.2	20.8
		THC	OPEN			CLOSED			35	35		
4/24/90 9:38	V2-2B	CO2/02	DIRECT						9.4		8.3	17.7
		THC	50	G	54	150	S	769	200	3048.1		

				CO2/THC DATA							O2 Data	
					Smpl			Dil.		Calc. Conc.	Gastech	
Date/Time	Sample		Smpl (Lt)		Flow	Dil. (Rt.)		Flow	Gastech-CO2 (%)	CO2 (%)	Reading	02+C02
m/d/y/ h:mm	Loc.	Anal.	Rotameter	G/S	cc/min	Rotameter	G/S	cc/min	SIP-THC (ppm)	THC (ppm)	O2 (%)	(%)
4/24/90 9:40	V2-2C	CO2/02	DIRECT						12.8		3.3	16.1
		THC	50	G	54	150	S	769	340	5181.9		
4/24/90 9:42	V2-3A	CO2/02	DIRECT						0.9		19.5	20.4
		THC	OPEN			CLOSED			45	45		
4/24/90 9:44	V2-3B	CO2/02	DIRECT						6.5		12.4	18.9
		THC	80	S	350	150	S	769	400	1278.9		
4/24/90 9:46	V2-3C	CO2/02	DIRECT						10.2		7.2	17.4
		THC	50	G	54	150	S	769	230	3505.4		
4/24/90 9:49	V2 disch	CO2/02	DIRECT						7.5		10.8	18.3
		THC	80	S	350	150	S	769	720	2301.9		
4/24/90 9:53	dewater	CO2/02	DIRECT						1.2		19.8	21.0
		THC	DIRECT						380-460	380-460		
4/24/90 9:55	V3A	CO2/02	DIRECT						1.5		19.2	20.7
		THC	DIRECT						4	4		
4/24/90 9:58	V3B	CO2/02	DIRECT						1.5		19.2	20.7
		THC	DIRECT						5	5		
4/24/90 10:00	V3C	CO2/02	DIRECT						1.6		19.2	20.8
		THC	DIRECT						3	3		
4/24/90 10:02	V3 disch	CO2/02	DIRECT						1.3		19.3	20.6
		THC	DIRECT						6	6		
4/24/90 10:04	V4A	CO2/02	DIRECT						1.3		19.5	20.8
		THC	DIRECT						2	2		
4/24/90 10:06	V4B	CO2/02	DIRECT						1.4		19.4	20.8
		THC	DIRECT						2	2		
4/24/90 10:08	V4C	CO2/02	DIRECT						1.6		19.2	20.8
		THC	DIRECT						1	1		
4/24/90 10:10	V4 disch	CO2/02	DIRECT						1.2		19.5	20.7
		THC	DIRECT						1	1		

				CO2/THC DATA								O2 Data	
						Smpl			Dil.		Calc. Conc.	Gastech	
Date/Time	Sample		Smpl (Lt)			Flow	Dil. (Rt.)		Flow	Gastech-CO2 (%)	CO2 (%)	Reading	02+C02
m/d/y/ h:mm	Loc.	Anal.	Rotameter	G/S		cc/min	Rotameter	G/S	cc/min	SIP-THC (ppm)	THC (ppm)	O2 (%)	(%)
4/24/90 13:00	Standard check with atmospheric air									0.0		20.9	
4/24/90 13:00	Standard check with 5.12% CO2/N2									5.1		0.0	
4/24/90 13:00	Standard check with 505 ppm std = 520 ppm.									505.0			
4/24/90 13:00	Bowers off for shutdown test no. 5												
4/24/90 15:55	Standard check with atmospheric air									0.0		20.9	
4/24/90 15:55	Standard check with 5.12% CO2/N2									5.1		0.0	
4/24/90 16:00	V1-1A	CO2/02	DIRECT							9.4		7.1	16.5
4/24/90 16:04	V1-1B	CO2/02	DIRECT							9.4		7.6	17.0
4/24/90 16:06	V1-1C	CO2/02	DIRECT							9.5		7.5	17.0
4/24/90 16:08	V1-2A	CO2/02	DIRECT							6.5		10.9	17.4
4/24/90 16:10	V1-2B	CO2/02	DIRECT							7		11	18.0
4/24/90 16:12	V1-2C	CO2/02	DIRECT							8.2		9.7	17.9
4/24/90 16:14	V1-3A	CO2/02	DIRECT							6.3		11.2	17.5
4/24/90 16:16	V1-3B	CO2/02	DIRECT							7.7		10.3	18.0
4/24/90 16:18	V1-3C	CO2/02	DIRECT							8.2		9.9	18.1
4/24/90 16:20	V2-1A	CO2/02	DIRECT							3.1		16.2	19.3
4/24/90 16:22	V2-1B	CO2/02	DIRECT							9		7	16.0
4/24/90 16:24	V2-1C	CO2/02	DIRECT							10.2		6.1	16.3
4/24/90 16:26	V2-2A	CO2/02	DIRECT							1.2		18.3	19.5
4/24/90 16:28	V2-2B	CO2/02	DIRECT							8.4		9.5	17.9
4/24/90 16:30	V2-2C	CO2/02	DIRECT							12.6		4.5	17.1
4/24/90 16:32	V2-3A	CO2/02	DIRECT							2.8		16.5	19.3
4/24/90 16:34	V2-3B	CO2/02	DIRECT							6.7		12	18.7
4/24/90 16:36	V2-3C	CO2/02	DIRECT							9.5		8.2	17.7
4/24/90 16:40	Standard check with atmospheric air									0.0		20.9	
	Standard check with 5.12% CO2/N2									5.1		0.0	
4/24/90 22:00	Standard check with atmospheric air									0.0		20.9	
	Standard check with 5.12% CO2/N2									5.1		0.0	

				CO2/THC DATA								O2 Data	
					Smpl			Dil.			Calc. Conc.	Gastech	
Date/Time	Sample		Smpl (Lt)		Flow	Dil. (Rt.)		Flow	Gastech-CO2 (%)	CO2 (%)	Reading	02+C02
m/d/y/ h:mm	Loc.	Anal.	Rotameter	G/S	cc/min	Rotameter	G/S	cc/min	SIP-THC (ppm)	THC (ppm)	O2 (%)	(%)
4/24/90 22:08	V1-1A	CO2/02	DIRECT						10.4		4.4	14.8
4/24/90 22:10	V1-1B	CO2/02	DIRECT						9.7		6.9	16.6
4/24/90 22:12	V1-1C	CO2/02	DIRECT						9.8		7.1	16.9
4/24/90 22:14	V1-2A	CO2/02	DIRECT						7.9		6.3	14.2
4/24/90 22:16	V1-2b	CO2/02	DIRECT						7.8		8.9	16.7
4/24/90 22:20	V1-2C	CO2/02	DIRECT						8.6		8.8	17.4
4/24/90 22:24	V1-3A	CO2/02	DIRECT						7.9		8.5	16.3
4/24/90 22:26	V1-3B	CO2/02	DIRECT						8.3		9	17.3
4/24/90 22:28	V1-3C	CO2/02	DIRECT						8.7		9.1	17.8
4/24/90 22:30	V2-1A	CO2/02	DIRECT						4.1		13.3	17.4
4/24/90 22:32	V2-1B	CO2/02	DIRECT						10.6		4.2	14.8
4/24/90 22:34	V2-1C	CO2/02	DIRECT						10.8		5	15.8
4/24/90 22:36	V2-2A	CO2/02	DIRECT						2.8		15.8	18.6
4/24/90 22:38	V2-2B	CO2/02	DIRECT						9.5		7.5	17.0
4/24/90 22:40	V2-2C	CO2/02	DIRECT						12.7		3.7	16.4
4/24/90 22:42	V2-3A	CO2/02	DIRECT						4.2		13.9	18.1
4/24/90 22:44	V2-3B	CO2/02	DIRECT						7.6		10.2	17.8
4/24/90 22:46	V2-3C	CO2/02	DIRECT						10		7.1	17.1
4/24/90 22:50	Standard check with atmospheric air								0.0		20.9	
	Standard check with 5.12% CO2/N2								5.1		0.0	
4/25/90 7:55	Standard check with atmospheric air								0.0		20.9	
	Standard check with 5.12% CO2/N2								5.1		0.0	
4/25/90 8:04	V1-1A	CO2/02	DIRECT						11.5		1.4	12.9
4/25/90 8:06	V1-1B	CO2/02	DIRECT						10.4		4.6	15.0
4/25/90 8:08	V1-1C	CO2/02	DIRECT						10.3		5.1	15.4
4/25/90 8:10	V1-2A	CO2/02	DIRECT						9.5		2.2	11.7
4/25/90 8:12	V1-2B	CO2/02	DIRECT						9.1		5.5	14.6
4/25/90 8:14	V1-2C	CO2/02	DIRECT						9.3		6.2	15.5
4/25/90 8:16	V1-3A	CO2/02	DIRECT						9.1		5.1	14.2

			CO2/THC DATA								O2 Data	
					Smpl			Dil.		Calc. Conc.	Gastech	
Date/Time	Sample		Smpl (Lt)		Flow	Dil. (Rt.)		Flow	Gastech-CO2 (%)	CO2 (%)	Reading	02+C02
m/d/y/ h:mm	Loc.	Anal.	Rotameter	G/S	cc/min	Rotameter	G/S	cc/min	SIP-THC (ppm)	THC (ppm)	O2 (%)	(%)
4/25/90 8:18	V1-3B	CO2/02	DIRECT						9.3		6.2	15.5
4/25/90 8:20	V1-3C	CO2/02	DIRECT						9.2		6.8	16.0
4/25/90 8:22	V2-1A	CO2/02	DIRECT						5.4		10.5	15.9
4/25/90 8:24	V2-1B	CO2/02	DIRECT						11.9		1.9	13.8
4/25/90 8:26	V2-1C	CO2/02	DIRECT						11.5		2.6	14.1
4/25/90 8:28	V2-2A	CO2/02	DIRECT						4.2		11.9	16.1
4/25/90 8:30	V2-2B	CO2/02	DIRECT						10.6		3.9	14.5
4/25/90 8:32	V2-2C	CO2/02	DIRECT						13.1		1.1	14.2
4/25/90 8:34	V2-3A	CO2/02	DIRECT						5.5		10.3	15.8
4/25/90 8:36	V2-3B	CO2/02	DIRECT						8.8		6.8	15.6
4/25/90 8:38	V2-3C	CO2/02	DIRECT						10.8		4.1	14.9
4/25/90 8:40	V3A	CO2/02	DIRECT						1.7		18.6	20.3
4/25/90 8:42	V3B	CO2/02	DIRECT						1.8		18.6	20.4
4/25/90 8:44	V3C	CO2/02	DIRECT						1.8		18.6	20.4
4/25/90 8:50	V4A	CO2/02	DIRECT						1.3		19.3	20.6
4/25/90 8:52	V4B	CO2/02	DIRECT						1.4		19.2	20.6
4/25/90 8:54	V4C	CO2/02	DIRECT						1.5		19.2	20.7
4/25/90 8:56	Standard check with atmospheric air								0.0		20.9	
	Standard check with 5.12% CO2/N2								5.1		0.0	
4/25/90 16:10	Standard check with atmospheric air								0.0		20.9	
	Standard check with 5.12% CO2/N2								5.1		0.0	
4/25/90 16:17	V1-1A	CO2/02	DIRECT						12		0.1	12.1
4/25/90 16:18	V1-1B	CO2/02	DIRECT						10.8		2.9	13.7
4/25/90 16:20	V1-1C	CO2/02	DIRECT						10.8		3.3	14.1
4/25/90 16:22	V1-2A	CO2/02	DIRECT						10.3		0	10.3
4/25/90 16:24	V1-2B	CO2/02	DIRECT						10		3.1	13.1
4/25/90 16:26	V1-2C	CO2/02	DIRECT						9.8		4	13.8
4/25/90 16:28	V1-3A	CO2/02	DIRECT						10		2.9	12.9
4/25/90 16:30	V1-3B	CO2/02	DIRECT						10		4.2	14.2

				CO2/THC DATA								O2 Data	
						Smpl			Dil.		Calc. Conc.	Gastech	
Date/Time		Sample		Smpl (Lt)		Flow	Dil. (Rt.)		Flow	Gastech-CO2 (%)	CO2 (%)	Reading	02+C02
m/d/y/	h:mm	Loc.	Anal.	Rotameter	G/S	cc/min	Rotameter	G/S	cc/min	SIP-THC (ppm)	THC (ppm)	O2 (%)	(%)
4/25/90	16:32	V1-3C	CO2/02	DIRECT						9.8		4.6	14.4
4/25/90	16:34	V2-1A	CO2/02	DIRECT						6.5		9	15.5
4/25/90	16:35	V2-1B	CO2/02	DIRECT						12.2		0.9	13.1
4/25/90	16:36	V2-1C	CO2/02	DIRECT						12.2		1.1	13.3
4/25/90	16:38	V2-2A	CO2/02	DIRECT						5.4		9.7	15.1
4/25/90	16:40	V2-2B	CO2/02	DIRECT						11.2		1.7	12.9
4/25/90	16:42	V2-2C	CO2/02	DIRECT						13		0	13.0
4/25/90	16:44	V2-3A	CO2/02	DIRECT						6.8		8.2	15.0
4/25/90	16:46	V2-3B	CO2/02	DIRECT						9.5		4.6	14.1
4/25/90	16:48	V2-3C	CO2/02	DIRECT						11.5		1.9	13.4
4/25/90	16:56	V3A	CO2/02	DIRECT						2		18.4	20.4
4/25/90	16:58	V3B	CO2/02	DIRECT						1.9		18.4	20.3
4/25/90	17:00	V3C	CO2/02	DIRECT						1.9		18.4	20.3
4/25/90	17:02	V4A	CO2/02	DIRECT						1.2		19.8	21.0
4/25/90	17:04	V4B	CO2/02	DIRECT						1.3		19.6	20.9
4/25/90	17:06	V4C	CO2/02	DIRECT						1.5		19.4	20.9
4/25/90	17:15	Standard check with atmospheric air								0.0		20.9	
		Standard check with 5.12% CO2/N2								5.1		0.0	
4/25/90	21:45	Standard check with atmospheric air								0.0		20.9	
		Standard check with 5.12% CO2/N2								5.1		0.0	
4/25/90	21:54	V1-1B	CO2/02	DIRECT						11.5		1.8	13.3
4/25/90	21:56	V1-1C	CO2/02	DIRECT						11.4		2.2	13.6
4/25/90	21:58	V1-2B	CO2/02	DIRECT						10.9		1.4	12.3
4/25/90	22:00	V1-2C	CO2/02	DIRECT						10.8		2.3	13.1
4/25/90	22:02	V1-3A	CO2/02	DIRECT						11.2		1.2	12.4
4/25/90	22:04	V1-3B	CO2/02	DIRECT						10.8		2.8	13.6
4/25/90	22:06	V1-3C	CO2/02	DIRECT						10.7		3.2	13.9
4/25/90	22:08	V2-1A	CO2/02	DIRECT						7.7		6.5	14.2
4/25/90	22:10	V2-2A	CO2/02	DIRECT						6.5		7.8	14.3

			CO2/THC DATA								O2 Data	
					Smpl			Dil.		Calc. Conc.	Gastech	
Date/Time	Sample		Smpl (Lt)		Flow	Dil. (Rt.)		Flow	Gastech-CO2 (%)	CO2 (%)	Reading	02+C02
m/d/y/ h:mm	Loc.	Anal.	Rotameter	G/S	cc/min	Rotameter	G/S	cc/min	SIP-THC (ppm)	THC (ppm)	O2 (%)	(%)
4/25/90 22:12	V2-2B	CO2/02	DIRECT						12.4		0.4	12.8
4/25/90 22:14	V2-3A	CO2/02	DIRECT						7.6		7.2	14.8
4/25/90 22:16	V2-3B	CO2/02	DIRECT						10.6		3.4	14.0
4/25/90 22:18	V2-3C	CO2/02	DIRECT						12.4		0.8	13.2
4/25/90 22:20	Standard check with atmospheric air								0.0		20.9	
	Standard check with 5.12% CO2/N2								5.1		0.0	
4/26/90 8:15	Standard check with atmospheric air								0.0		20.9	
	Standard check with 5.12% CO2/N2								5.1		0.0	
4/26/90 8:20	V2-1A	CO2/02	DIRECT						8.9		4.5	13.4
4/26/90 8:22	V2-2A	CO2/02	DIRECT						7.4		5.3	12.7
4/26/90 8:24	V2-3A	CO2/02	DIRECT						8.2		4.9	13.1
4/26/90 8:26	V2-3B	CO2/02	DIRECT						11.2		1.9	13.1
4/26/90 8:32	V3A	CO2/02	DIRECT						2.2		18.2	20.4
4/26/90 8:34	V3B	CO2/02	DIRECT						2.2		18.2	20.4
4/26/90 8:36	V3C	CO2/02	DIRECT						2.2		18.2	20.4
4/26/90 8:38	V4A	CO2/02	DIRECT						1.5		19.3	20.8
4/26/90 8:40	V4B	CO2/02	DIRECT						1.5		19.3	20.8
4/26/90 8:42	V4C	CO2/02	DIRECT						1.6		19.2	20.8
4/26/90 8:45	Standard check with atmospheric air								0.0		20.9	
	Standard check with 5.12% CO2/N2								5.1		0.0	
4/26/90 9:00	Temperature at V1-1, 2' = 26.6°C; V1-1, 4' = 25.3°C											
4/26/90 9:00	Temperature at V2-1, 2' = 25.9°C; V2-1, 4' = 26.0°C											
5/2/90 9:00	Temperature at V2-1, 2' = 26.7°C											
5/2/90 9:00	Temperature at V4, 2' = 25.7°C											
5/2/90 9:30	Note: Turned on blowers. Flow rates, V1 = 4.22 LPM, V2 = 4.32 LPM.											

Appendix C

Operational Data

Table 16. Operational data for Treatment Plot V1

Date m/d/y h:mm	Venting Time (days)	CO2 (%)	O2 (%)	THC (ppm)	02+C02 (%)	Average Rotameter	Avg Air Flow (LPM)	Int Vol Air (L)	Cumul Vol Air (L)	Cumul O2 Prov (g)	Inter O2 Disch (g)	Cumul O2 Disch (g)	Cumul O2 Used (g)
10/4/89 10:05	0.00	15.60	1.4	20640	17.0								
10/5/89 8:07	0.92	6.50	11	21261	17.5	12.9	9.8	12962	12962	3244	1070	1070	2174
10/10/89 14:00	6.16	13.89	4.2	27891	18.1	9.0	5.4	40413	53375	13357	4088	5158	8199
10/12/89 12:00	8.08	15.54	3.8	8087	19.3	6.7	3.3	8985	62360	15606	478	5637	9969
10/16/89 12:00	12.08	9.46	9	15919	18.5	11.9	8.6	49430	111790	27975	4211	9848	18128
10/20/89 12:00	16.08	7.49	12.6	13106	20.1	11.9	8.6	49568	161358	40380	7126	16974	23406
10/24/89 9:35	19.98	5.58	13	10516	18.6	14.1	11.3	63619	224976	56300	10840	27813	28487
10/24/89 10:13	20.01	Blowers off for Shutdown Test 1				14.5	11.9	452	225428	56413	78	27891	28522
10/26/89 12:00	20.01	Blowers on											
10/27/89 11:11	20.97	8.99	9.1	10288	18.1	13.4	10.4	14433	239862	60025	1748	29640	30386
10/31/89 12:00	25.01	6.11	12.6	6234	18.7	13.3	10.4	60127	299988	77197	8684	38324	38873
11/3/89 12:00	28.01	8.68	10.5	6831	19.2	13.3	10.3	44659	344648	89149	6866	45190	43959
11/6/89 12:00	31.01	5.72	14	5988	19.7	12.9	9.8	42304	386952	99060	6898	52088	46972
11/9/89 12:00	34.01	7.29	13	6148	20.3	12.7	9.5	41011	427963	111270	7370	59458	51813
11/14/89 15:00	39.13	6.66	15	6618	21.7	11.6	8.2	60715	488678	126405	11315	70772	55633
11/16/89 15:00	41.13	5.32	14.8	5439	20.1	10.9	7.4	21373	510051	136014	4239	75011	61002
11/21/89 15:00	46.13	4.30	15	4385	19.3	11.1	7.7	55233	565284	146974	10955	85966	61008
11/24/89 14:00	49.09	4.80	15	2703	19.8	9.3	5.7	24266	589550	160358	4845	90811	69547
11/28/89 12:43	53.04	4.50	14.7	4908	19.2	9.1	5.5	31442	620992	162286	6215	97026	65260
11/28/89 15:11	53.14	Blowers off for Shutdown Test 2				8.6	5.0	739	621731	162479	145	97171	65308
12/1/89 14:00	53.14	Blowers on											
12/2/89 17:58	54.30	9.18	10	3389	19.2	7.8	4.2	7013	628744	169342	934	98104	71237
12/7/89 12:00	59.05	4.40	15.8	2920	20.2	7.7	4.2	28469	657213	177009	4888	102993	74017
12/11/89 12:00	63.05	4.50	15.5	2304	20.0	7.6	4.0	23274	680487	181463	4849	107841	73622
12/13/89 14:30	65.16	4.40	15.8	2103	20.2	7.9	4.3	12946	693433	189538	2697	110538	79000
12/15/89 11:30	67.03	4.50	16	2049	20.5	7.9	4.3	11638	705071	189899	2463	113001	76898
12/22/89 12:00	74.05	3.40	16.5	2049	19.9	7.7	4.1	41879	746950	209146	9059	122060	87086
12/27/89 12:00	79.05	2.90	17.7	1498	20.6	7.6	4.0	28894	775844	215167	6577	128637	86531
12/29/89 12:00	81.05	2.80	17.5	1183	20.3	7.5	4.0	11426	787270	209939	2677	131314	78625

Table 16 Cont. Operational data for Treatment Plot V1.

Date m/d/y h:mm	Venting Time (days)	CO2 (%)	O2 (%)	THC (ppm)	02+C02 (%)	Average Rotameter	Avg Air Flow (LPM)	Int Vol Air (L)	Cumul Vol Air (L)	Cumul O2 Prov (g)	Inter O2 Disch (g)	Cumul O2 Disch (g)	Cumul O2 Used (g)
1/2/90 12:00	85.05	2.60	17.3	1500	19.9	7.8	3.3	18889	806158	217125	4375	135689	81437
1/3/90 14:28	86.16	2.80	18.1	1856	20.9	7.9	3.3	5286	811445	221795	1245	136934	84861
1/3/90 15:33	86.20	Blowers off for Shutdown Test 3				7.9	3.3	216	811661	221854	52	136986	84868
1/8/90 13:30	86.20	Blowers on											
1/10/90 11:43	88.13	3.20	17.5	1999	20.7	14.2	8.1	22401	834062	224641	5218	142204	82436
1/12/90 8:56	90.01		17.8	1583		14.2	8.1	21917	855979	230544	5149	147354	83190
1/16/90 10:00	94.06	3.30	16.7	2113	20.0	9.0	4.2	24577	880556	237163	5643	152997	84166
1/19/90 8:00	96.97	4.10	15.8	1690	19.9	9.0	4.2	17724	898280	241937	3834	156831	85106
1/22/90 10:30	100.08	4.80	15.5	1822	20.3	9.0	4.2	18863	917144	247017	3930	160760	86257
1/25/90 6:00	102.89	Blowers off for Shutdown Test 3A				9.0	4.2	17091	934235	251621	3526	164287	87334
1/26/90 15:00	102.89	Blowers on											
2/1/90 16:30	108.95	7.00	12.3	1934	19.3	5.5	2.0	17085	951320	257491	2797	167084	90407
2/4/90 16:30	111.95	8.00	10.8	2247	18.8	5.5	2.0	8454	959774	262338	1300	168384	93955
2/9/90 8:00	116.60	8.00	10.2	2337	18.2	5.5	2.0	13093	972867	262025	1830	170214	91812
2/12/90 15:00	119.89	7.80	10.6	1679	18.4	5.5	2.0	9276	982143	263214	1284	171498	91717
2/21/90 8:00	128.60	9.40	6.9	1886	16.3	3.7	1.1	13625	995769	266866	1587	173085	93781
2/24/90 10:30	131.70	8.50	8.9	2543	17.4	3.7	1.1	4857	1000625	268168	511	173596	94572
2/28/90 10:00	135.68	7.30	10.2	1852	17.5	3.7	1.1	6226	1006851	269836	791	174387	95449
3/3/90 10:35	138.71	4.80	15.3	1489	20.1	7.5	3.1	13429	1020280	273435	2279	176666	96769
3/7/90 11:49	142.76	4.10	15.6	1550	19.7	9.0	4.0	23560	1043840	279749	4845	181511	98238
3/8/90 9:00	143.64	4.50	15.3	1368	19.8	9.0	4.0	5133	1048972	281125	1056	182567	98558
3/8/90 11:35	143.75	Blowers off for Shutdown Test 4				9.0	4.0	626	1049598	281292	127	182694	98598
3/10/90 18:05	143.75	Blowers on											
3/10/90 18:40	143.77	8.80	4.9	2058	13.7	9.0	4.0	141	1049740	281330	9	182704	98627
3/11/90 18:25	144.76	6.80	12.5	1308	19.3	9.0	4.0	5755	1055494	282872	666	183370	99502
3/12/90 8:45	145.36	6.40	12.8	1937	19.2	9.0	4.0	3473	1058967	283803	585	183955	99848
3/13/90 8:00	146.33	6.00	13.4	2119	19.4	9.0	4.0	5633	1064601	285313	982	184937	100376
3/25/90 8:30	158.35	4.60	14.5	1471	19.1	9.0	4.0	69904	1134504	304047	12980	197918	106130
3/30/90 8:30	163.35	5.90	13.2	1359	19.1	9.0	4.0	29076	1163580	311839	5360	203278	108562
4/9/90 10:00	173.41	4.70	15	1359	19.7	9.0	4.0	58515	1222096	327522	10983	214261	113261
4/13/90 9:30	177.39	4.60	15.2	1599	19.8	9.0	4.0	23140	1245235	333723	4651	218912	114811
4/24/90 9:30	188.39	6.10	12.7	1599	18.8	9.0	4.0	63967	1309202	350866	11878	230790	120077
4/24/90 13:00	188.54	Blowers off for Shutdown Test 5				9.0	4.0	848	1310051	351094	143	230933	120160
5/2/90 9:30	196.39	Blowers on											

Table 16 Cont. Operational data for Treatment Plot V1.

Date m/d/y h:mm	Hexane Eq. CO2 (g)	Hexane Eq. O2 (g)	Hexane Eq. THC (g)	% Biol Deg CO2 Basis	% Biol Deg O2 Basis	Cum Hex Eq CO2 (g)	Cum Hex Eq O2 (g)	Cum Hex Eq THC (g)	Cum Hex Eq O2&THC (g)	Cum Hex Eq CO2&THC (g)	Cum % Bio Deg CO2 Basis	Cum % Biol Deg O2 Basis
10/4/89 10:05												
10/5/89 8:07	730	615	971	42.9	38.8	730	615	971	1587	1702	42.9	38.8
10/10/89 14:00	2071	1704	3553	36.8	32.4	2801	2319	4524	6844	7326	38.2	33.9
10/12/89 12:00	703	501	578	54.9	46.4	3504	2820	5103	7923	8607	40.7	35.6
10/16/89 12:00	3213	2308	2122	60.2	52.1	6717	5128	7225	12353	13942	48.2	41.5
10/20/89 12:00	2033	1493	2573	44.1	36.7	8750	6622	9799	16420	18548	47.2	40.3
10/24/89 9:35	1873	1437	2688	41.1	34.8	10623	8059	12487	20545	23109	46.0	39.2
10/24/89 10:13	11	10	17	38.7	36.7	10633	8069	12504	20572	23137	46.0	39.2
10/26/89 12:00												
10/27/89 11:11	636	527	531	54.5	49.8	11269	8596	13035	21631	24304	46.4	39.7
10/31/89 12:00	2240	1913	1777	55.8	51.8	13509	10509	14812	25321	28321	47.7	41.5
11/3/89 12:00	1649	1320	1044	61.2	55.8	15159	11829	15855	27685	31014	48.9	42.7
11/6/89 12:00	1437	1107	970	59.7	53.3	16595	12937	16825	29762	33421	49.7	43.5
11/9/89 12:00	1224	927	890	57.9	51.0	17820	13863	17716	31579	35535	50.1	43.9
11/14/89 15:00	2019	1257	1386	59.3	47.6	19839	15121	19102	34223	38941	50.9	44.2
11/16/89 15:00	649	410	461	58.5	47.1	20488	15531	19563	35094	40050	51.2	44.3
11/21/89 15:00	1255	957	970	56.4	49.6	21743	16488	20533	37021	42276	51.4	44.5
11/24/89 14:00	557	493	308	64.4	61.6	22300	16981	20841	37822	43141	51.7	44.9
11/28/89 12:43	703	562	428	62.2	56.8	23003	17544	21269	38813	44272	52.0	45.2
11/28/89 15:11	16	14	13	55.0	51.2	23019	17557	21282	38839	44301	52.0	45.2
12/1/89 14:00												
12/2/89 17:58	355	269	85	80.7	76.0	23373	17827	21367	39194	44740	52.2	45.5
12/7/89 12:00	1034	783	321	76.3	70.9	24407	18609	21688	40298	46096	52.9	46.2
12/11/89 12:00	548	381	217	71.6	63.7	24955	18990	21906	40896	46861	53.3	46.4
12/13/89 14:30	305	236	102	74.9	69.9	25260	19227	22008	41235	47268	53.4	46.6
12/15/89 11:30	281	188	86	76.5	68.6	25541	19415	22094	41510	47636	53.6	46.8
12/22/89 12:00	936	749	307	75.3	70.9	26478	20164	22401	42566	48879	54.2	47.4
12/27/89 12:00	474	403	183	72.1	68.7	26951	20567	22585	43152	49536	54.4	47.7
12/29/89 12:00	160	103	55	74.5	65.3	27112	20670	22639	43310	49751	54.5	47.7

Table 16 Cont. Operational data for Treatment Plot V1.

Date m/d/y h:mm	Hexane Eq. CO2 (g)	Hexane Eq. O2 (g)	Hexane Eq. THC (g)	% Biol Deg CO2 Basis	% Biol Deg O2 Basis	Cum Hex Eq CO2 (g)	Cum Hex Eq O2 (g)	Cum Hex Eq THC (g)	Cum Hex Eq O2&THC (g)	Cum Hex Eq CO2&THC (g)	Cum % Bio Deg CO2 Basis	Cum % Biol Deg O2 Basis
1/2/90 12:00	248	199	91	73.2	68.7	27359	20869	22730	43600	50089	54.6	47.9
1/3/90 14:28	76	56	32	70.4	63.7	27435	20925	22762	43687	50197	54.7	47.9
1/3/90 15:33	3	2	1	69.2	57.6	27438	20927	22763	43690	50202	54.7	47.9
1/8/90 13:30												
1/10/90 11:43	374	236	160	70.0	59.6	27812	21163	22923	44087	50736	54.8	48.0
1/12/90 8:56	157	219	140	52.8	60.9	27969	21382	23064	44446	51033	54.8	48.1
1/16/90 10:00	154	273	162	48.6	62.7	28123	21655	23226	44881	51349	54.8	48.2
1/19/90 8:00	317	264	121	72.4	68.6	28440	21919	23347	45266	51787	54.9	48.4
1/22/90 10:30	422	323	119	78.1	73.2	28862	22242	23465	45707	52327	55.2	48.7
1/25/90 6:00	418	302	111	78.9	73.1	29279	22544	23577	46121	52856	55.4	48.9
1/26/90 15:00												
2/1/90 16:30	642	515	118	84.4	81.3	29921	23059	23695	46754	53616	55.8	49.3
2/4/90 16:30	348	285	63	84.6	81.8	30269	23344	23758	47102	54027	56.0	49.6
2/9/90 8:00	554	468	107	83.8	81.4	30823	23812	23866	47678	54689	56.4	49.9
2/12/90 15:00	393	339	67	85.5	83.6	31217	24151	23932	48083	55149	56.6	50.2
2/21/90 8:00	651	587	87	88.2	87.1	31868	24739	24019	48758	55887	57.0	50.7
2/24/90 10:30	251	230	38	86.7	85.7	32118	24969	24058	49027	56176	57.2	50.9
2/28/90 10:00	268	250	49	84.5	83.6	32386	25219	24107	49325	56493	57.3	51.1
3/3/90 10:35	437	382	80	84.5	82.6	32823	25601	24187	49787	57010	57.6	51.4
3/7/90 11:49	542	430	128	80.9	77.1	33365	26031	24315	50346	57680	57.8	51.7
3/8/90 9:00	113	94	27	80.9	77.8	33478	26125	24342	50466	57820	57.9	51.8
3/8/90 11:35	15	12	3	82.6	79.4	33493	26136	24345	50481	57838	57.9	51.8
3/10/90 18:05												
3/10/90 18:40	6	8	1	86.2	88.4	33499	26144	24346	50490	57845	57.9	51.8
3/11/90 18:25	230	241	35	86.9	87.4	33730	26385	24380	50765	58110	58.0	52.0
3/12/90 8:45	114	94	20	85.0	82.3	33844	26478	24401	50879	58244	58.1	52.0
3/13/90 8:00	172	142	41	80.8	77.7	34015	26621	24441	51062	58457	58.2	52.1
3/25/90 8:30	1795	1593	449	80.0	78.0	35811	28213	24890	53103	60701	59.0	53.1
3/30/90 8:30	738	673	147	83.4	82.1	36549	28886	25037	53924	61586	59.3	53.6
4/9/90 10:00	1573	1322	284	84.7	82.3	38121	30209	25322	55530	63443	60.1	54.4
4/13/90 9:30	532	427	122	31.3	77.7	38653	30636	25444	56080	64097	60.3	54.6
4/24/90 9:30	1585	1337	366	81.3	78.5	40239	31972	25810	57782	66049	60.9	55.3
4/24/90 13:00	25	22	5	83.7	81.7	40263	31994	25815	57809	66078	60.9	55.3
5/2/90 9:30												

Table 16 Cont. Operational data for Treatment Plot V1.

Date m/d/y h:mm	Hexane Eq. CO2 (g/day)	Hexane Eq. O2 (g/day)	Hexane Eq. THC (g/day)	Tot Hexane Eq. O2&THC (g/day)	Tot Hexane Eq. CO2&THC (g/day)	Hexane Eq. CO2 (mg/(kg day))	Hexane Eq. O2 (mg/(kg day))	Hexane Eq. THC (mg/(kg day))	Tot Hexane Eq. O2&THC (mg/(kg day))
10/4/89 10:05									
10/5/89 8:07	795.5	669.9	1058.2	1728.1	1853.8	27.7	23.3	36.8	60.1
10/10/89 14:00	394.9	325.0	677.4	1002.3	1072.2	13.7	11.3	23.5	34.8
10/12/89 12:00	366.6	261.3	301.7	562.9	668.3	12.7	9.1	10.5	19.6
10/16/89 12:00	803.3	577.0	530.6	1107.6	1333.9	27.9	20.1	18.4	38.5
10/20/89 12:00	508.2	373.3	643.3	1016.6	1151.5	17.7	13.0	22.4	35.3
10/24/89 9:35	480.3	368.6	689.4	1058.0	1169.6	16.7	12.8	24.0	36.8
10/24/89 10:13	406.6	374.1	644.3	1018.4	1051.0	14.1	13.0	22.4	35.4
10/26/89 12:00									
10/27/89 11:11	658.1	545.8	549.9	1095.7	1208.0	22.9	19.0	19.1	38.1
10/31/89 12:00	555.4	474.3	440.5	914.7	995.9	19.3	16.5	15.3	31.8
11/3/89 12:00	549.7	440.0	347.9	787.9	897.6	19.1	15.3	12.1	27.4
11/6/89 12:00	478.9	369.0	323.3	692.4	802.3	16.6	12.8	11.2	24.1
11/9/89 12:00	408.0	308.9	296.8	605.6	704.8	14.2	10.7	10.3	21.1
11/14/89 15:00	394.0	245.4	270.5	515.9	664.5	13.7	8.5	9.4	17.9
11/16/89 15:00	324.4	205.2	230.5	435.7	554.9	11.3	7.1	8.0	15.1
11/21/89 15:00	251.0	191.3	194.1	385.4	445.1	8.7	6.7	6.7	13.4
11/24/89 14:00	188.3	166.8	104.0	270.8	292.3	6.5	5.8	3.6	9.4
11/28/89 12:43	178.1	142.5	108.5	251.0	286.6	6.2	5.0	3.8	8.7
11/28/89 15:11	154.3	132.7	126.2	258.9	280.5	5.4	4.6	4.4	9.0
12/1/89 14:00									
12/2/89 17:58	304.4	231.2	73.0	304.1	377.4	10.6	8.0	2.5	10.6
12/7/89 12:00	217.6	164.7	67.6	232.3	285.2	7.6	5.7	2.4	8.1
12/11/89 12:00	137.0	95.3	54.4	149.7	191.4	4.8	3.3	1.9	5.2
12/13/89 14:30	144.9	112.4	48.5	160.9	193.4	5.0	3.9	1.7	5.6
12/15/89 11:30	149.9	100.5	46.1	146.6	196.0	5.2	3.5	1.6	5.1
12/22/89 12:00	133.4	106.7	43.7	150.4	177.1	4.6	3.7	1.5	5.2
12/27/89 12:00	94.8	80.5	36.7	117.2	131.4	3.3	2.8	1.3	4.1
12/29/89 12:00	80.0	51.6	27.4	79.0	107.4	2.8	1.8	1.0	2.7

Table 16 Cont. Operational data for Treatment Plot V1.

Date m/d/y h:mm	Hexane Eq. CO2 (g/day)	Hexane Eq. O2 (g/day)	Hexane Eq. THC (g/day)	Tot Hexane Eq. O2&THC (g/day)	Tot Hexane Eq. CO2&THC (g/day)	Hexane Eq. CO2 (mg/(kg day))	Hexane Eq. O2 (mg/(kg day))	Hexane Eq. THC (mg/(kg day))	Tot Hexane Eq. O2&THC (mg/(kg day))
1/2/90 12:00	61.9	49.8	22.7	72.5	84.6	2.2	1.7	0.8	2.5
1/3/90 14:28	68.6	50.5	28.8	79.3	97.4	2.4	1.8	1.0	2.8
1/3/90 15:33	71.5	43.3	31.8	75.2	103.3	2.5	1.5	1.1	2.6
1/8/90 13:30									
1/10/90 11:43	194.2	122.7	83.2	205.8	277.4	6.8	4.3	2.9	7.2
1/12/90 8:56	83.2	116.1	74.5	190.6	157.7	2.9	4.0	2.6	6.6
1/16/90 10:00	38.0	67.5	40.2	107.7	78.2	1.3	2.3	1.4	3.7
1/19/90 8:00	108.7	90.4	41.3	131.7	150.0	3.8	3.1	1.4	4.6
1/22/90 10:30	135.9	104.1	38.2	142.3	174.1	4.7	3.6	1.3	4.9
1/25/90 6:00	148.5	107.6	39.6	147.2	188.2	5.2	3.7	1.4	5.1
1/26/90 15:00									
2/1/90 16:30	105.9	84.9	19.5	104.4	125.4	3.7	3.0	0.7	3.6
2/4/90 16:30	115.9	95.0	21.1	116.1	137.0	4.0	3.3	0.7	4.0
2/9/90 8:00	119.3	100.8	23.1	123.9	142.4	4.1	3.5	0.8	4.3
2/12/90 15:00	119.5	102.9	20.2	123.2	139.7	4.2	3.6	0.7	4.3
2/21/90 8:00	74.8	67.5	10.0	77.4	84.7	2.6	2.3	0.3	2.7
2/24/90 10:30	80.8	74.2	12.4	86.6	93.2	2.8	2.6	0.4	3.0
2/28/90 10:00	67.3	62.7	12.3	75.0	79.6	2.3	2.2	0.4	2.6
3/3/90 10:35	144.5	126.2	26.5	152.8	171.1	5.0	4.4	0.9	5.3
3/7/90 11:49	133.7	106.2	31.6	137.8	165.3	4.6	3.7	1.1	4.8
3/8/90 9:00	128.5	106.2	30.4	136.6	158.8	4.5	3.7	1.1	4.7
3/8/90 11:35	135.2	109.5	28.5	138.0	163.7	4.7	3.8	1.0	4.8
3/10/90 18:05									
3/10/90 18:40	267.0	326.3	42.8	369.1	309.8	9.3	11.3	1.5	12.8
3/11/90 18:25	232.7	243.1	35.0	278.1	267.7	8.1	8.5	1.2	9.7
3/12/90 8:45	191.0	156.6	33.8	190.3	224.8	6.6	5.4	1.2	6.6
3/13/90 8:00	177.1	146.7	42.2	188.9	219.3	6.2	5.1	1.5	6.6
3/25/90 8:30	149.3	132.5	37.3	169.8	186.7	5.2	4.6	1.3	5.9
3/30/90 8:30	147.6	134.7	29.4	164.1	177.0	5.1	4.7	1.0	5.7
4/9/90 10:00	156.3	131.4	28.3	159.7	184.6	5.4	4.6	1.0	5.6
4/13/90 9:30	133.7	107.3	30.8	138.1	164.5	4.6	3.7	1.1	4.8
4/24/90 9:30	144.1	121.5	33.3	154.8	177.4	5.0	4.2	1.2	5.4
4/24/90 13:00	170.2	148.9	33.3	182.2	203.4	5.9	5.2	1.2	6.3
5/2/90 9:30									

Table 16 Cont. Operational data for Treatment Plot V1.

Date m/d/y h:mm	Tot Hexane Eq. CO2&THC (mg/(kg day))	Ambient Mean Temp °C	Soil Mean Temp °C
10/4/89 10:05		25.0	
10/5/89 8:07	64.4	23.6	
10/10/89 14:00	37.3	19.4	
10/12/89 12:00	23.2	23.3	
10/16/89 12:00	46.4	26.1	
10/20/89 12:00	40.0	9.2	
10/24/89 9:35	40.7	19.2	
10/24/89 10:13	36.5	19.2	
10/26/89 12:00			
10/27/89 11:11	42.0	20.0	
10/31/89 12:00	34.6	20.6	
11/3/89 12:00	31.2	15.6	
11/6/89 12:00	27.9	18.3	
11/9/89 12:00	24.5	17.8	
11/14/89 15:00	23.1	20.0	
11/16/89 15:00	19.3	15.0	
11/21/89 15:00	15.5	20.6	
11/24/89 14:00	10.2	11.1	
11/28/89 12:43	10.0	20.0	
11/28/89 15:11	9.8	20.0	
12/1/89 14:00			
12/2/89 17:58	13.1	12.8	
12/7/89 12:00	9.9	20.6	
12/11/89 12:00	6.7	13.9	
12/13/89 14:30	6.7	8.3	
12/15/89 11:30	6.8	13.9	
12/22/89 12:00	6.2	0.6	
12/27/89 12:00	4.6	12.8	
12/29/89 12:00	3.7	13.9	

Table 16 Cont. Operational data for Treatment Plot V1.

Date m/d/y h:mm	Tot Hexane Eq. CO2&THC (mg/(kg day))	Ambient Mean Temp °C	Soil Mean Temp °C
1/2/90 12:00	2.9	8.9	
1/3/90 14:28	3.4	15.0	
1/3/90 15:33	3.6	15.0	17.7
1/8/90 13:30		13.3	
1/10/90 11:43	9.6	14.4	
1/12/90 8:56	5.5	11.1	
1/16/90 10:00	2.7	16.7	
1/19/90 8:00	5.2	18.3	
1/22/90 10:30	6.1	11.1	
1/25/90 6:00	6.5	16.1	18.5
1/26/90 15:00		8.9	
2/1/90 16:30	4.4	16.7	
2/4/90 16:30	4.8	15.0	
2/9/90 8:00	5.0	20.0	
2/12/90 15:00	4.9	15.0	
2/21/90 8:00	2.9	16.7	
2/24/90 10:30	3.2	11.7	
2/28/90 10:00	2.8	15.0	
3/3/90 10:35	5.9	13.9	
3/7/90 11:49	5.7	21.7	
3/8/90 9:00	5.5	20.0	
3/8/90 11:35	5.7	20.0	
3/10/90 18:05		20.6	
3/10/90 18:40	10.3	20.6	
3/11/90 18:25	9.3	21.7	
3/12/90 8:45	7.8	21.1	22.0
3/13/90 8:00	7.6	21.1	
3/25/90 8:30	6.5	20.0	
3/30/90 8:30	6.2	22.2	
4/9/90 10:00	6.4	18.9	
4/13/90 9:30	5.7	17.2	
4/24/90 9:30	6.2	22.2	
4/24/90 13:00	7.1	22.2	26.0
5/2/90 9:30			

Table 17. Operational data for Treatment Plot V2

Date m/d/y h:mm	Venting Time (days)	CO2 (%)	O2 (%)	THC (ppm)	02+C02 (%)	Average Rotameter	Avg Air Flow (LPM)	Int Vol Air (L)	Cumul Vol Air (L)	Cumul O2 Prov (g)	Inter O2 Disch (g)	Cumul O2 Disch (g)	Cumul O2 Used (g)
10/4/89 10:40	0.00	16.17	6	6414	22.2								
10/5/89 12:00	1.08	7.00	11	10528	18.0	13.5	10.3	15970	15970	3996	1807	1807	2189
10/10/89 14:00	6.16	10.42	6.5	23623	16.9	8.5	4.8	35172	51142	12798	4097	5904	6895
10/12/89 12:00	8.08	10.77	7.5	10262	18.3	6.0	3.0	8294	59435	14874	773	6676	8197
10/16/89 12:00	12.08	6.90	12.3	24233	19.2	12.1	8.6	49272	108707	27204	6493	13169	14035
10/20/89 12:00	16.08	4.65	14.9	14298	19.6	11.3	7.6	43804	152511	38166	7930	21099	17067
10/24/89 8:57	19.95	5.10	13.5	11583	18.6	8.0	4.4	24726	177238	44354	4674	25773	18581
10/24/89 10:13	20.01	Blowers off for Shutdown Test 1				8.0	4.4	337	177575	44438	61	25834	18604
10/26/89 12:00	20.01	Blowers on											
10/27/89 10:48	20.96	8.21	9	13869	17.2	13.4	10.1	13814	191389	47895	1655	27489	20406
10/31/89 12:00	25.01	6.11	11.2	8539	17.3	13.2	9.9	57977	249366	64170	7795	35283	28887
11/3/89 12:00	28.01	8.68	10	13957	18.7	13.2	9.9	42890	292256	75597	6052	41335	34262
11/6/89 12:00	31.01	7.10	12.5	12425	19.6	13.3	10.0	43284	335540	85898	6482	47817	38082
11/9/89 12:00	34.01	8.77	10.7	8185	19.5	13.3	10.0	43341	378881	98509	6692	54509	44000
11/14/89 15:00	39.13	4.79	15.8	7136	20.6	13.2	9.9	73078	451959	116907	12889	67398	49509
11/16/89 15:00	41.13	5.52	14	4058	19.5	13.3	10.1	28969	480928	128247	5746	73143	55104
11/21/89 15:00	46.13	5.32	13.2	5273	18.5	13.4	10.2	73276	554204	144093	13265	86409	57684
11/24/89 14:00	49.09	4.90	13.8	3952	18.7	13.4	10.2	43299	597503	162521	7781	94190	68331
11/28/89 13:50	53.08	5.47	13	6354	18.5	13.4	10.2	58367	655870	171401	10411	104600	66800
11/28/89 15.11	53.14	Blowers off for Shutdown Test 2				13.3	10.0	813	656682	171613	141	104741	66872
12/1/89 14:00	53.14	Blowers on											
12/2/89 17:46	54.30	6.84	13	4142	19.8	13.4	10.1	16889	673572	181415	2923	107664	73752
12/7/89 12:00	59.05	4.90	15	3517	19.9	13.4	10.1	69393	742965	200105	12932	120596	79510
12/11/89 12:00	63.05	3.40	16.7	2893	20.1	13.3	10.0	57411	800376	213434	12113	132708	80725
12/13/89 14:30	65.16	2.90	17.1	2813	20.0	13.2	9.9	29925	830301	226949	6732	139440	87509
12/15/89 11:30	67.03	3.30	17.3	2090	20.6	13.3	10.0	26982	857283	230895	6178	145618	85277
12/22/89 12:00	74.05	2.60	16.8	2090	19.4	13.2	9.9	100242	957526	268107	22750	168368	99739
12/27/89 12:00	79.05	2.60	17.9	2267	20.5	13.2	10.0	71670	1029196	285430	16552	184920	100510
12/29/89 12:00	81.05	2.30	17.7	1518	20.0	13.3	10.1	28969	1058165	282177	6864	191784	90393

Table 17 Cont. Operational data for Treatment Plot V2.

Date m/d/y h:mm	Venting Time (days)	CO2 (%)	O2 (%)	THC (ppm)	02+C02 (%)	Average Rotameter	Avg Air Flow (LPM)	Int Vol Air (L)	Cumul Vol Air (L)	Cumul O2 Prov (g)	Inter O2 Disch (g)	Cumul O2 Disch (g)	Cumul O2 Used (g)
1/2/90 12:00	85.05	1.90	18.2	1600	20.1	13.3	10.0	57788	1115953	300563	13808	205592	94971
1/3/90 14:32	86.16	2.40	18.3	1915	20.7	13.3	10.0	15868	1131821	309364	3855	209447	99918
1/3/90 15:33	86.20	Blowers off for Shutdown Test 3				13.0	9.6	588	1132409	309525	143	209590	99935
1/8/90 13:30	86.20	Blowers on											
1/12/90 9:40	90.04	3.00	17.5	1758	20.5	13.8	8.0	44480	1176889	316975	10361	219951	97024
1/16/90 10:00	94.06	3.60	16.2	2061	19.8	9.0	4.3	24820	1201709	323660	5567	225518	98142
1/19/90 8:00	96.97	4.20	14.7	2244	18.9	9.0	4.3	18212	1219922	328566	3745	229264	99302
1/22/90 10:30	100.08	5.20	15.4	2270	20.6	9.0	4.3	19414	1239336	333795	3889	233153	100641
1/25/90 6:00	102.89	Blowers off for Shutdown Test 3A				9.0	4.3	17505	1256841	338509	3588	236742	101768
1/26/90 15:00	102.89	Blowers on											
2/1/90 16:30	108.95	6.80	12.2	2300	18.8	5.5	2.1	17954	1274795	345045	2916	239657	105387
2/4/90 16:30	111.95	6.90	12.9	2276	19.8	5.5	2.1	8885	1283680	350872	1484	241141	109731
2/9/90 8:00	116.60	8.60	7.9	2750	16.5	5.5	2.1	13759	1297439	345984	1905	243046	102937
2/12/90 15:00	119.89	9.10	7.9	2877	17.0	5.5	2.1	9748	1307187	350326	1025	244071	106255
2/21/90 8:00	128.60	6.70	11.8	2430	18.5	3.7	1.0	13022	1320209	353816	1707	245779	108037
2/24/90 10:30	131.70	6.00	13	2046	19.0	3.7	1.0	4642	1324851	355060	766	246545	108515
2/28/90 10:00	135.68	6.10	12	2107	18.1	3.7	1.0	5950	1330801	356655	990	247535	109120
3/3/90 10:35	138.71	4.70	15.2	1870	19.9	7.5	3.3	14393	1345194	360512	2606	250141	110372
3/7/90 11:53	142.76	4.90	14.2	1887	19.1	9.0	4.3	25233	1370428	367275	4937	255078	112197
3/8/90 9:25	143.66	4.70	15	2174	19.7	9.0	4.3	5584	1376012	363771	1085	256163	112608
3/8/90 11:35	143.75	Blowers off for Shutdown Test 4				9.0	4.3	562	1376574	368922	112	256275	112646
3/10/90 18:05	143.75	Blowers on											
3/10/90 18:45	143.78	9.80	3.1	3069	12.9	9.0	4.3	173	1376747	368968	7	256283	112686
3/11/90 18:30	144.77	7.70	10.1	2334	17.8	9.0	4.3	6159	1382906	370619	541	256824	113795
3/12/90 8:55	145.37	7.20	10.7	2782	17.9	9.0	4.3	3739	1386645	371621	518	257341	114279
3/13/90 8:10	146.33	6.80	11.2	2638	18.0	9.0	4.3	6029	1392674	373237	879	258220	115017
3/25/90 8:30	158.35	4.60	14.8	2110	19.4	9.0	4.3	74774	1467448	393276	12939	271159	122117
3/30/90 8:30	163.35	5.90	12.5	2238	18.4	9.0	4.3	31120	1498568	401616	5654	276814	124803
4/9/90 10:00	173.41	5.00	14.7	1966	19.7	9.0	4.3	62629	1561197	418401	11338	288152	130249
4/13/90 9:30	177.39	4.90	13.8	2078	18.7	9.0	4.3	24766	1585964	425038	4698	292849	132189
4/24/90 9:30	188.39	7.50	10.8	2302	18.3	9.0	4.3	68464	1654428	443387	11209	304059	139328
4/24/90 13:00	188.54	Blowers off for Shutdown Test 5				9.0	4.3	908	1655335	443630	130	304189	139441
5/2/90 9:30	196.39	Blowers on											

Table 17 Cont. Operational data for Treatment Plot V2.

Date m/d/y h:mm	Hexane Eq. CO2 (g)	Hexane Eq. O2 (g)	Hexane Eq. THC (g)	% Biol Deg CO2 Basis	% Biol Deg O2 Basis	Cum Hex Eq CO2 (g)	Cum Hex Eq O2 (g)	Cum Hex Eq THC (g)	Cum Hex Eq O2&THC (g)	Cum Hex Eq CO2&THC (g)	Cum % Bio Deg CO2 Basis	Cum % Biol Deg O2 Basis
10/4/89 10:05												
10/5/89 8:07	951	619	484	66.3	56.1	951	619	484	1103	1435	66.3	56.1
10/10/89 14:00	1491	1331	2148	41.0	38.3	2442	1950	2632	4583	5074	48.1	42.6
10/12/89 12:00	445	369	503	46.9	42.3	2886	2319	3135	5454	6021	47.9	42.5
10/16/89 12:00	2125	1651	3040	41.1	35.2	5011	3970	6175	10146	11186	44.8	39.1
10/20/89 12:00	1090	858	3019	26.5	22.1	6102	4828	9194	14022	15296	39.9	34.4
10/24/89 9:35	483	428	1145	29.7	27.2	6584	5256	10339	15595	16923	38.9	33.7
10/24/89 10:13	7	7	14	33.5	32.5	6592	5263	10353	15616	16944	38.9	33.7
10/26/89 12:00												
10/27/89 11:11	544	510	685	44.3	42.7	7136	5773	11038	16811	18174	39.3	34.3
10/31/89 12:00	2024	2009	2324	46.6	46.4	9160	7781	13362	21143	22522	40.7	36.8
11/3/89 12:00	1583	1421	1726	47.8	45.2	10743	9203	15088	24290	25831	41.6	37.9
11/6/89 12:00	1648	1296	2043	44.7	38.8	12391	10499	17130	27629	29521	42.0	38.0
11/9/89 12:00	1663	1289	1598	51.0	44.7	14054	11788	18728	30516	32782	42.9	38.6
11/14/89 15:00	2345	1720	2003	53.9	46.2	16399	13508	20731	34239	37130	44.2	39.5
11/16/89 15:00	735	556	580	55.9	49.0	17134	14064	21311	35375	38445	44.6	39.8
11/21/89 15:00	1932	1628	1223	61.2	57.1	19066	15692	22534	38226	41600	45.8	41.1
11/24/89 14:00	1139	1125	714	61.5	61.2	20205	16817	23248	40065	43453	46.5	42.0
11/28/89 12:43	1491	1363	1076	58.1	55.9	21697	18180	24324	42504	46021	47.1	42.8
11/28/89 15:11	22	20	18	54.5	52.2	21719	18200	24343	42543	46061	47.2	42.8
12/1/89 14:00												
12/2/89 17:58	618	458	250	71.2	64.7	22337	18658	24593	43251	46930	47.6	43.1
12/7/89 12:00	2139	1620	951	69.2	63.0	24475	20278	25543	45821	50019	48.9	44.3
12/11/89 12:00	1249	897	658	65.5	57.7	25725	21175	26202	47377	51927	49.5	44.7
12/13/89 14:30	473	406	305	60.8	57.0	26198	21581	26507	48088	52705	49.7	44.9
12/15/89 11:30	434	305	237	64.7	56.3	26632	21886	26744	48629	53376	49.9	45.0
12/22/89 12:00	1644	1491	749	68.7	66.5	28276	23377	27493	50870	55769	50.7	46.0
12/27/89 12:00	940	931	559	62.7	62.5	29216	24308	28052	52360	57268	51.0	46.4
12/29/89 12:00	337	240	196	63.2	55.0	29553	24548	28248	52796	57800	51.1	46.5

Table 17 Cont. Operational data for Treatment Plot V2.

Date m/d/y h:mm	Hexane Eq CO2 (g)	Hexane Eq. O2 (g)	Hexane Eq. THC (g)	% Biol Deg CO2 Basis	% Biol Deg O2 Basis	Cum Hex Eq CO2 (g)	Cum Hex Eq O2 (g)	Cum Hex Eq THC (g)	Cum Hex Eq O2&THC (g)	Cum Hex Eq CO2&THC (g)	Cum % Bio Deg CO2 Basis	Cum % Biol Deg O2 Basis
1/2/90 12:00	551	490	322	63.1	60.3	30104	25038	28570	53608	58674	51.3	46.7
1/3/90 14:28	175	134	100	63.7	57.4	30279	25172	28670	53842	58949	51.4	46.8
1/3/90 15:33	7	5	4	64.6	54.7	30286	25177	28674	53851	58960	51.4	46.8
1/8/90 13:30												
1/10/90 11:43	690	469	280	71.1	62.6	30976	25646	28954	54600	59930	51.7	47.0
1/12/90 8:56	400	322	170	70.2	65.5	31375	25968	29123	55092	60499	51.9	47.1
1/16/90 10:00	347	326	140	71.2	69.9	31723	26294	29264	55558	60986	52.0	47.3
1/19/90 8:00	463	377	157	74.7	70.6	32186	26671	29420	56091	61606	52.2	47.5
1/22/90 10:30	470	316	71	86.9	81.7	32655	26987	29491	56478	62147	52.5	47.8
1/25/90 6:00												
1/26/90 15:00	653	271	73	89.9	79.8	33308	27258	29565	56822	62873	53.0	48.0
2/1/90 16:30	331	266	73	82.0	78.5	33640	27524	29637	57161	63277	53.2	48.2
2/4/90 16:30	562	497	124	82.0	80.1	34201	28021	29761	57782	63962	53.5	48.5
2/9/90 8:00	469	448	98	82.7	82.0	34670	28469	29859	58328	64529	53.7	48.8
2/12/90 15:00	568	508	124	82.1	80.4	35238	28977	29983	58959	65221	54.0	49.1
2/21/90 8:00	168	142	37	81.9	79.2	35406	29118	30020	59138	65425	54.1	49.2
2/24/90 10:30	190	173	44	81.1	79.6	35596	29291	30064	59355	65660	54.2	49.3
2/28/90 10:00	413	363	102	80.1	78.0	36008	29654	30166	59820	66175	54.4	49.6
3/3/90 10:35	633	532	170	78.9	75.8	36641	30186	30336	60522	66977	54.7	49.9
3/7/90 11:49	140	120	41	77.5	74.7	36781	30306	30377	60682	67158	54.8	49.9
3/8/90 9:00	14	11	4	75.9	72.0	36795	30317	30381	60698	67176	54.8	49.9
3/8/90 11:35												
3/10/90 18:05	9	11	2	82.5	85.1	36804	30328	30383	60711	67187	54.8	50.0
3/10/90 18:40	281	306	60	82.5	83.7	37085	30634	30442	61077	67528	54.9	50.2
3/11/90 18:25	142	132	34	80.6	79.5	37227	30766	30477	61243	67704	55.0	50.2
3/12/90 8:45	212	201	58	78.4	77.5	37440	30967	30535	61502	67975	55.1	50.4
3/13/90 8:00	2099	1971	635	76.8	75.6	39539	32938	31170	64108	70709	55.9	51.4
3/25/90 8:30	790	744	242	76.5	75.5	40328	33683	31412	65095	71741	56.2	51.7
3/30/90 8:30	1739	1533	471	78.7	76.5	42068	35216	31883	67099	73951	56.9	52.5
4/9/90 10:00	614	536	179	77.4	75.0	42682	35752	32062	67814	74744	57.1	52.7
4/13/90 9:30	2044	1856	536	79.2	77.6	44726	37608	32599	70207	77325	57.8	53.6
4/24/90 9:30	34	30	7	82.0	79.9	44760	37638	32606	70244	77366	57.9	53.6
5/2/90 9:30												

Table 17 Cont. Operational data for Treatment Plot V2.

Date m/d/y h:mm	Hexane Eq. CO2 (g/day)	Hexane Eq. O2 (g/day)	Hexane Eq. THC (g/day)	Tot Hexane Eq. O2&THC (g/day)	Tot Hexane Eq. CO2&THC (g/day)	Hexane Eq. CO2 (mg/(kg day))	Hexane Eq. O2 (mg/(kg day))	Hexane Eq. THC (mg/(kg day))	Tot Hexane Eq. O2&THC (mg/(kg day))
10/4/89 10:05									
10/5/89 8:07	880.6	573.6	448.1	1021.7	1328.7	30.6	19.9	15.6	35.5
10/10/89 14:00	293.3	261.8	422.7	684.5	715.6	10.2	9.1	14.7	23.8
10/12/89 12:00	232.0	192.3	262.3	454.5	494.2	8.1	6.7	9.1	15.8
10/16/89 12:00	531.2	412.8	760.0	1172.9	1291.2	18.5	14.4	26.4	40.8
10/20/89 12:00	272.6	214.4	754.7	969.2	1027.4	9.5	7.5	26.2	33.7
10/24/89 9:35	124.7	110.6	295.5	406.1	420.2	4.3	3.8	10.3	14.1
10/24/89 10:13	133.2	127.4	264.5	392.0	397.8	4.6	4.4	9.2	13.6
10/26/89 12:00									
10/27/89 11:11	572.7	536.6	721.5	1258.1	1294.2	19.9	18.7	25.1	43.7
10/31/89 12:00	499.8	495.9	573.8	1069.7	1073.6	17.4	17.2	19.9	37.2
11/3/89 12:00	527.7	473.8	575.3	1049.0	1103.0	18.3	16.5	20.0	36.5
11/6/89 12:00	549.4	431.9	680.9	1112.8	1230.2	19.1	15.0	23.7	38.7
11/9/89 12:00	554.4	429.8	532.6	962.4	1086.9	19.3	14.9	18.5	33.5
11/14/89 15:00	457.6	335.6	390.8	726.4	848.4	15.9	11.7	13.6	25.3
11/16/89 15:00	367.5	278.2	290.0	568.2	657.5	12.8	9.7	10.1	19.8
11/21/89 15:00	386.4	325.6	244.6	570.2	631.0	13.4	11.3	8.5	19.8
11/24/89 14:00	385.0	380.3	241.5	621.8	626.5	13.4	13.2	8.4	21.6
11/28/89 12:43	373.5	341.3	269.4	610.7	642.9	13.0	11.9	9.4	21.2
11/28/89 15:11	393.7	359.1	328.4	687.4	722.1	13.7	12.5	11.4	23.9
12/1/89 14:00									
12/2/89 17:58	534.3	395.8	216.3	612.1	750.6	18.6	13.8	7.5	21.3
12/7/89 12:00	449.3	340.4	199.7	540.1	649.0	15.6	11.8	6.9	18.8
12/11/89 12:00	312.4	224.3	164.6	388.9	476.9	10.9	7.8	5.7	13.5
12/13/89 14:30	224.7	192.8	145.2	338.0	369.9	7.8	6.7	5.0	11.7
12/15/89 11:30	231.7	162.6	126.2	288.8	357.9	8.1	5.7	4.4	10.0
12/22/89 12:00	234.1	212.4	106.7	319.1	340.9	8.1	7.4	3.7	11.1
12/27/89 12:00	188.0	186.2	111.7	297.9	299.7	6.5	6.5	3.9	10.4
12/29/89 12:00	168.4	120.0	98.1	218.1	266.5	5.9	4.2	3.4	7.6

Table 17 Cont. Operational data for Treatment Plot V2.

Date m/d/y h:mm	Hexane Eq. CO2 (g/day)	Hexane Eq. O2 (g/day)	Hexane Eq. THC (g/day)	Tot Hexane Eq. O2&THC (g/day)	Tot Hexane Eq. CO2&THC (g/day)	Hexane Eq. CO2 (mg/(kg day))	Hexane Eq. O2 (mg/(kg day))	Hexane Eq. THC (mg/(kg day))	Tot Hexane Eq. O2&THC (mg/(kg day))
1/2/90 12:00	137.8	122.4	80.6	203.0	218.4	4.8	4.3	2.8	7.1
1/3/90 14:28	158.3	121.6	90.2	211.8	248.5	5.5	4.2	3.1	7.4
1/3/90 15:33	173.9	115.1	95.1	210.2	269.0	6.0	4.0	3.3	7.3
1/8/90 13:30									
1/10/90 11:43	179.5	122.1	72.9	195.0	252.4	6.2	4.2	2.5	6.8
1/12/90 8:56	99.5	80.3	42.2	122.6	141.8	3.5	2.8	1.5	4.3
1/16/90 10:00	119.1	111.7	48.1	159.8	167.2	4.1	3.9	1.7	5.6
1/19/90 8:00	149.2	121.3	50.5	171.8	199.7	5.2	4.2	1.8	6.0
1/22/90 10:30	167.0	112.5	25.3	137.8	192.3	5.8	3.9	0.9	4.8
1/25/90 6:00									
1/26/90 15:00	107.7	44.7	12.1	56.8	119.8	3.7	1.6	0.4	2.0
2/1/90 16:30	110.4	88.7	24.2	112.9	134.6	3.8	3.1	0.8	3.9
2/4/90 16:30	121.0	107.1	26.6	133.7	147.6	4.2	3.7	0.9	4.6
2/9/90 8:00	142.4	136.1	29.8	165.9	172.2	4.9	4.7	1.0	5.8
2/12/90 15:00	65.2	58.3	14.2	72.5	79.4	2.3	2.0	0.5	2.5
2/21/90 8:00	54.0	45.6	12.0	57.6	66.0	1.9	1.6	0.4	2.0
2/24/90 10:30	47.8	43.4	11.1	54.5	58.9	1 7	1.5	0.4	1.9
2/28/90 10:00	136.4	120.1	33.9	153.9	170.3	4.7	4.2	1.2	5.4
3/3/90 10:35	156.1	131.2	41.8	173.1	197.9	5.4	4.6	1.5	6.0
3/7/90 11:49	156.1	133.6	45.2	178.8	201.3	5.4	4.6	1.6	6.2
3/8/90 9:00	152.1	124.2	48.4	172.6	200.6	5.3	4.3	1.7	6.0
3/8/90 11:35									
3/10/90 18:05	322.9	391.4	68.3	459.7	391.2	11.2	13.6	2.4	16.0
3/10/90 18:40	284.4	309.4	60.2	369.5	344.5	9.9	10.8	2.1	12.8
3/11/90 18:25	236.0	220.3	56.9	277.3	293.0	8.2	7.7	2.0	9.6
3/12/90 8:45	219.3	207.4	60.3	267.8	279.6	7.6	7.2	2.1	9.3
3/13/90 8:00	174.7	164.1	52.9	216.9	227.6	6.1	5.7	1.8	7.5
3/25/90 8:30	158.0	148.8	48.4	197.2	206.4	5.5	5.2	1.7	6.9
3/30/90 8:30	172.8	152.3	46.8	199.1	219.7	6.0	5.3	1.6	6.9
4/9/90 10:00	154.3	134.8	45.0	179.8	199.3	5.4	4.7	1.6	6.3
4/13/90 9:30	185.9	168.7	48.8	217.5	234.6	6.5	5.9	1.7	7.6
4/24/90 9:30	234.2	203.9	51.3	255.2	285.4	8.1	7.1	1.8	8.9
5/2/90 9:30									

Table 17 Cont. Operational data for Treatment Plot V2.

Date m/d/y h:mm	Tot Hexane Eq. CO2&THC (mg/(kg day))	Ambient Mean Temp °C	Soil Mean Temp °C
10/4/89 10:05		25.0	
10/5/89 8:07	46.2	23.6	
10/10/89 14:00	24.9	19.4	
10/12/89 12:00	17.2	23.3	
10/16/89 12:00	44.9	26.1	
10/20/89 12:00	35.7	9.2	
10/24/89 9:35	14.6	19.2	
10/24/89 10:13	13.8	19.2	
10/26/89 12:00			
10/27/89 11:11	45.0	20.0	
10/31/89 12:00	37.3	20.6	
11/3/89 12:00	38.3	15.6	
11/6/89 12:00	42.8	18.3	
11/9/89 12:00	37.8	17.8	
11/14/89 15:00	29.5	20.0	
11/16/89 15:00	22.9	15.0	
11/21/89 15:00	21.9	20.6	
11/24/89 14:00	21.8	11.1	
11/28/89 12:43	22.4	20.0	
11/28/89 15:11	25.1	20.0	
12/1/89 14:00			
12/2/89 17:58	26.1	12.8	
12/7/89 12:00	22.6	20.6	
12/11/89 12:00	16.6	13.9	
12/13/89 14:30	12.9	8.3	
12/15/89 11:30	12.4	13.9	
12/22/89 12:00	11.8	0.6	
12/27/89 12:00	10.4	12.8	
12/29/89 12:00	9.3	13.9	

Table 17 Cont. Operational data for Treatment Plot V2.

Date m/d/y h:mm	Tot Hexane Eq. CO2&THC (mg/(kg day))	Ambient Mean Temp °C	Soil Mean Temp °C
1/2/90 12:00	7.6	8.9	
1/3/90 14:28	8.6	15.0	
1/3/90 15:33	9.4	15.0	17.7
1/8/90 13:30		13.3	
1/10/90 11:43	8.8	14.4	
1/12/90 8:56	4.9	11.1	
1/16/90 10:00	5.8	16.7	
1/19/90 8:00	6.9	18.3	
1/22/90 10:30	6.7	11.1	
1/25/90 6:00		16.1	18.5
1/26/90 15:00	4.2	8.9	
2/1/90 16:30	4.7	16.7	
2/4/90 16:30	5.1	15.0	
2/9/90 8:00	6.0	20.0	
2/12/90 15:00	2.8	15.0	
2/21/90 8:00	2.3	16.7	
2/24/90 10:30	2.0	11.7	
2/28/90 10:00	5.9	15.0	
3/3/90 10:35	6.9	13.9	
3/7/90 11:49	7.0	21.7	
3/8/90 9:00	7.0	20.0	
3/8/90 11:35		20.0	
3/10/90 18:05	13.6	20.6	
3/10/90 18:40	12.0	20.6	
3/11/90 18:25	10.2	21.7	
3/12/90 8:45	9.7	21.1	22.0
3/13/90 8:00	7.9	21.1	
3/25/90 8:30	7.2	20.0	
3/30/90 8:30	7.6	22.2	
4/9/90 10:00	6.9	18.9	
4/13/90 9:30	8.2	17.2	
4/24/90 9:30	9.9	22.2	
5/2/90 9:30			

Table 18. Operational data for Off-Gas Treatment Plot V3 discharge.

Date m/d/y h:mm	Venting Time (days)	CO2 (%)	O2 (%)	THC (ppm)	02+C02 (%)	Average Rotameter	Avg Air Flow (LPM)	Int Vol Air (L)	Cumul Vol Air (L)	Hexane Eq. THC (g)	Cum Hex Eq THC (g)
10/4/89 12:03	0.08	1.9	17.5	88.0	19.4						
10/10/89 14:00	6.16	3.2	16.2	1900.0	19.4	90	0.90	7881	7881	28.0	28
10/12/89 12:00	8.08	3.5	15.9	220.0	19.4	67	0.60	1656	9537	6.3	34
10/16/89 12:00	12.08	3.1	16.0	430.0	19.1	52	0.50	2880	12417	3.3	38
10/20/89 12:00	16.08	2.2	18.0	13.0	20.2	54	0.50	2880	15297	2.3	40
10/24/89 8:08	19.92	2.1	18.5	14.0	20.6	50	0.50	2764	18061	0.1	40
10/24/89 10:13	20.01	Blowers off for Shutdown Test 1				50	0.50	63	18124	0.0	40
10/26/89 12:00	20.01	Blowers on									
10/27/89 10:00	20.92	2.6	17.2	73.0	19.8	108	1.10	1452	19576	0.4	40
10/31/89 12:00	25.01	2.8	17.0	97.0	19.8	106	1.00	5880	25456	1.8	42
11/3/89 12:00	28.01	2.6	18.0	115.0	20.6	102	1.00	4320	29776	1.6	44
11/6/89 12:00	31.01	1.7	19.0	150.0	20.7	106	1.00	4320	34096	2.0	46
11/9/89 12:00	34.01	2.0	19.0	1050.0	21.0	106	1.00	4320	38416	9.3	55
11/14/89 15:00	39.13	2.0	19.0	530.0	21.0	106	1.00	7380	45796	20.9	76
11/16/89 15:00	41.13	2.0	18.5	90.0	20.5	104	1.00	2880	48676	3.2	79
11/21/89 15:00	46.13	1.3	19.4	265.0	20.7	107	1.00	7200	55876	4.6	84
11/24/89 14:00	49.09	1.3	19.7	400.0	21.0	108	1.00	4260	60136	5.1	89
11/28/89 14:25	53.11	1.6	18.7	5.0	20.3	107	1.00	5785	65921	4.2	93
11/28/89 15:11	53.14	Blowers off for Shutdown Test 2				107	1.00	46	65967	0.0	93
12/1/89 14:00	53.14	Blowers on									
12/2/89 17:30	54.28	2.2	16.5	264.0	18.7	50	3.95	6510	72477	6.1	99
12/7/89 12:00	59.05	2.6	17.5	1459.0	20.1	50	3.95	27106	99583	83.5	183
12/11/89 12:00	63.05	4.5	15.5	1326.6	20.0	49	3.83	22043	121626	109.8	293
12/13/89 14:30	65.16	2.8	17.5	595.0	20.3	49	3.83	11595	133222	39.9	332
12/15/89 11:30	67.03	4.5	15.1	1143.5	19.6	45	3.36	9083	142304	28.2	361
12/22/89 12:00	74.05	2.6	17.5	1143.5	20.1	40	2.81	28432	170737	116.3	477
12/27/89 12:00	79.05	1.8	18.8	370.0	20.6	40	2.81	20248	190985	54.8	532
12/29/89 12:00	81.05	1.5	19.0	370.0	20.5	40	2.81	8099	199084	10.7	543
1/2/90 12:00	85.05	2.9	17.5	610.0	20.4	40	2.81	16199	215283	28.4	571
1/3/90 14:13	86.15	2.8	17.9	940.0	20.7	40	2.81	4424	219707	12.3	583
1/3/90 15:33	86.20	Blowers off for Shutdown Test 3				40	2.81	225	219932	0.8	584
1/8/90 13:30	86.20	Blowers on									
1/10/90 12:05	88.14	2.9	18.1	1230.9	21.0	70	6.57	18366	238298	80.9	665
1/12/90 10:10	90.06	2.8	17.7	950.0	20.5	70	6.57	18169	256467	70.9	736
1/16/90 10:00	94.06	3.3	17.0	905.0	20.3	45	3.36	19343	275810	64.2	800
1/19/90 8:00	96.97	4.0	16.0	1080.0	20.0	45	3.36	14129	289939	50.2	850
1/22/90 10:30	100.08	4.5	15.2	1000.0	19.7	45	3.36	15037	304976	55.9	906
1/24/90 14:00	102.22	3.9	16.1	1170.0	20.0	45	3.36	10395	315371	40.3	946
1/25/90 6:00	102.89	Blowers off for Shutdown Test 3A				45	3.36	3229	318600	13.5	960
1/26/90 15:00	102.89	Blowers on									
2/1/90 16:30	108.95	5.6	13.8	765.0	19.4	25	1.34	11669	330269	31.9	992
2/4/90 16:30	111.95	6.7	12.0	960.0	18.7	25	1.34	5774	336043	17.8	1010
2/12/90 15:00	119.89	7.4	10.7	283.3	18.1	25	1.34	15277	351320	34.0	1044
2/21/90 8:00	128.60	9.5	5.3	25.0	14.8	17.5	0.70	8775	360095	4.8	1048
2/24/90 10:30	131.70	6.7	11.8	20.0	18.5	18.1	0.75	3344	363439	0.3	1049
2/28/90 10:00	135.68	6.3	12.0	56.0	18.3	18.2	0.76	4334	367773	0.6	1049
3/3/90 10:35	138.71	5.1	15.0	390.0	20.1	42	3.03	13193	380966	10.5	1060
3/3/90 11:06	138.73	Blowers off (V3&V4) for SD Test 4				42	3.03	94	381060	0.1	1060
3/6/90 12:30	138.73	Blowers on (V3 &V4) Direct JP-4 injection									
3/7/90 11:07	139.67	2.8	17.8	2174.0	20.6	17.5	0.70	950	382009	7.4	1067
3/7/90 14:00	139.79	2.6	17.8	2206.0	20.4	17.5	0.70	121	382130	0.9	1068
3/8/90 11:50	140.70	2.5	17.8	1215.0	20.3	17.5	0.70	917	383047	5.6	1074
3/8/90 15:12	140.84	2.6	17.7	1087.0	20.3	17.5	0.70	141	383188	0.6	1074
3/8/90 18:08	140.96	2.7	17.8	1007.0	20.5	17.5	0.70	123	383312	0.5	1075
3/8/90 22:00	141.13	2.7	17.8	895.0	20.5	17.5	0.70	162	383474	0.6	1075
3/8/90 23:15	141.18	2.7	17.8	895.0	20.5	17.5	0.70	52	383526	0.2	1076
3/9/90 8:55	141.58	2.7	17.5	895.0	20.2	17.5	0.70	406	383932	1.3	1077
3/9/90 9:20	141.60	Blowers off (V3) for Shutdown Test 4a				17.5	0.70	17	383950	0.1	1077
3/12/90 9:15	141.60	Blowers on (V3)									
3/13/90 7:53	142.54	2.2	16.3	6.0	18.5	17.5	0.70	950	384900	0.0	1077
3/25/90 8:30	154.57	1.5	19.0	2.4	20.5	17.5	0.70	12117	397017	0.2	1077
3/30/90 8:30	159.57	1.8	19.0	1.8	20.8	17.5	0.70	5038	402055	0.0	1077
4/9/90 10:00	169.63	1.4	19.1	2.5	20.5	17.5	0.70	10139	412194	0.1	1077
4/13/90 9:30	173.61	1.3	19.2	2.5	20.5	17.5	0.70	4009	416203	0.0	1077
4/24/90 9:30	184.61	1.3	19.3	6.0	20.6	17.5	0.70	11084	427287	0.2	1078
4/24/90 13:00	184.76	Blowers off for Shutdown Test 5				17.5	0.70	147	427434	0.0	1078
5/2/90 9:30	184.76	Blowers on									

Table 19. Operational data for Off-Gas Treatment Plot V3 inlet.

Date m/d/y h:mm	Venting Time (days)	CO2 (%)	O2 (%)	THC (µL/L)	O2+CO2 (%)	Avg Air Flow (L/min)	Int Vol Air (L)	Cumul Vol Air (L)	Hexane Eq. THC (g)	Cum Hex Eq THC (g)
10/4/89 11:25	0.06	13.8	4.6	12048	18.4					
10/10/89 14:00	6.16	3.6	15.5	7139	19.1	1.26	11082	11082	380.3	380
10/12/89 12:00	8.08	2.9	17.5	2425	20.4	0.54	1497	12579	25.6	406
10/16/89 12:00	12.08	4.3	15.2	8410	19.5	1.43	8238	20818	159.7	566
10/20/89 12:00	16.08	3.7	16.5	5717	20.2	1.43	8261	29079	208.8	774
10/24/89 7:28	19.89	2.4	18.0	150	20.4	1.89	10363	39442	108.8	883
10/24/89 10:13	20.01	Blowers off for Shutdown Test 1				1.98	327	39769	0.2	883
10/26/89 12:00	20.01	Blowers on								
10/27/89 10:15	20.93	4.6	14.5	4528	19.1	1.73	2309	42078	37.4	921
10/31/89 12:00	25.01	3.8	16.0	3497	19.8	1.73	10118	52196	145.2	1066
11/3/89 12:00	28.01	2.7	17.5	1341	20.2	1.72	7443	59639	64.4	1130
11/6/89 12:00	31.01	1.7	19.0	250	20.7	1.63	7051	66690	20.1	1150
11/9/89 12:00	34.01	2.6	18.0	1400	20.6	1.58	6835	73525	20.2	1171
11/14/89 15:00	39.13	2.6	17.6	3511	20.2	1.37	10119	83644	88.9	1259
11/16/89 15:00	41.13	2.7	17.8	1181	20.5	1.24	3562	87206	29.9	1289
11/24/89 14:00	49.09	2.4	18.4	1360	20.8	0.95	10880	98086	49.4	1339
11/28/89 14:39	53.12	2.2	18.1	1622	20.3	0.92	5347	103433	28.5	1367
11/28/89 15:11	53.14	Blowers off for Shutdown Test 2				0.83	27	103460	0.2	1367
12/1/89 14:00	53.14	Blowers on								
12/2/89 16:46	54.25	9.2	9.6	2558	18.8	4.18	6712	110172	61.4	1429
12/7/89 12:00	59.05	5.0	14.7	2335	19.7	4.16	28768	138940	251.7	1681
12/11/89 12:00	63.05	4.5	15.5	2545	20.0	4.04	23274	162215	203.1	1884
12/13/89 14:30	65.16	4.4	16.0	2178	20.4	4.27	12946	175161	109.4	1993
12/15/89 11:30	67.03	4.5	14.5	1741	19.0	4.31	11638	186799	81.6	2075
12/22/89 12:00	74.05	3.4	17.0	1741	20.4	4.14	41879	228677	260.9	2336
12/27/89 12:00	79.05	1.9	18.8	1400	20.7	4.01	28894	257572	162.3	2498
12/29/89 12:00	81.05	1.3	19.4	530	20.7	3.97	11426	268997	39.4	2537
1/2/90 12:00	85.05	3.0	17.3	1450	20.3	3.28	18889	287886	66.9	2604
1/3/90 14:20	86.15	2.8	18.0	2188	20.8	3.33	5260	293146	34.2	2639
1/3/90 15:33	86.20	Blowers off for Shutdown Test 3				3.33	243	293389	1.9	2640
1/8/90 13:30	86.20	Blowers on								
1/10/90 12:03	88.14	3.0	17.6	2188	20.6	8.08	22563	315952	176.6	2817
1/12/90 10:05	90.06	3.0	17.6	1495	20.6	8.08	22313	338264	147.0	2964
1/16/90 10:00	94.06	3.3	17.0	1964	20.3	4.22	24286	362550	150.2	3114
1/19/90 8:00	96.97	4.2	15.9	1485	20.1	4.22	17724	380274	109.3	3224
1/22/90 10:30	100.08	4.9	15.5	1788	20.4	4.22	18863	399138	110.4	3334
1/24/90 14:00	102.22	4.5	15.2	2296	19.7	4.22	13040	412178	95.2	3429
1/25/90 6:00	102.89	Blowers off for Shutdown Test 3A				4.22	4051	416229	33.3	3463
1/26/90 15:00	102.89	Blowers on								
2/1/90 16:30	108.95	6.8	12.1	1710	18.9	1.96	17085	433314	104.5	3567
2/4/90 16:30	111.95	8.0	10.5	1739	18.5	1.96	8454	441768	52.1	3619
2/12/90 15:00	119.89	7.9	10.8	2228	18.7	1.96	22369	464137	158.7	3778
2/21/90 8:00	128.60	9.6	6.5	1828	16.1	1.09	13669	477806	99.2	3877
2/24/90 10:30	131.70	8.5	9.2	1961	17.7	1.09	4857	482663	32.9	3910
2/28/90 10:00	135.68	7.3	10.3	2374	17.6	1.09	6226	488889	48.3	3958
3/3/90 11:00	138.72	4.7	15.5	1133	20.2	3.08	13490	502379	84.6	4043
3/3/90 11:06	138.73	Blowers off (V3&V4) for Shutdown Test				3.08	19	502397	0.1	4043
3/6/90 12:30	138.73	Blowers on (V3 &V4) Direct JP-4 injection								
3/7/90 11:05	139.67	0.2	20.3	10668	20.5	1.20	1626	504023	62.1	4105
3/7/90 13:54	139.79	0.5	20.1	10668	20.6	1.20	203	504226	7.7	4113
3/8/90 11:45	140.70	0.6	20.2	7316	20.8	1.20	1573	505799	50.6	4163
3/8/90 15:26	140.85	0.5	20.5	8230	21.0	1.20	265	506065	7.4	4171
3/8/90 18:02	140.96	0.6	20.3	7620	20.9	1.20	187	506252	5.3	4176
3/8/90 21:57	141.12	0.4	20.6	7620	21.0	1.20	282	506534	7.7	4184
3/8/90 23:20	141.18	0.7	20.3	7163	21.0	1.20	100	506633	2.6	4186
3/9/90 8:50	141.58	0.6	20.4	7925	21.0	1.20	684	507317	18.5	4205
3/9/90 9:20	141.60	Blowers off (V3) for Shutdown Test 4a				1.20	36	507353	1.0	4206
3/12/90 9:15	141.60	Blowers on (V3)								
3/13/90 7:53	142.54	0.0	20.9	0	20.9					
3/25/90 8:30	154.57	0.0	20.9	0	20.9					
3/30/90 8:30	159.57	0.0	20.9	0	20.9					
4/9/90 10:00	169.63	0.0	20.9	0	20.9					
4/13/90 9:30	173.61	0.0	20.9	0	20.9					
4/24/90 9:30	184.61	0.0	20.9	0	20.9					
4/24/90 13:00	184.76	Blowers off for Shutdown Test 5								
5/2/90 9:30	184.76	Blowers on								

Table 20. Calculated operational data for Off-Gas Treatment Plot V3.

Date m/d/y h:mm	Calc. Qi/Qo = a	Calc. Qi (L/min)	Int Vol Air (L)	Cumul Vol Air (L)	Hexane Eq. THC (g)	Cum Hex Eq THC (g)	Calc K %O2/min	% THC Biodegraded	Air Flow Void Vol/day	Cum % THC Biodegraded	Biodegradation (mg/(kg day)	Biodegradation (g/(m3 day)	loading rate g/(m3 day)
10/4/89 11:25													
10/10/89 14:00	.29	0.26	2283	2283	78.3	78	.00014	64	1.25	64	1.72	2.48	3.86
10/12/89 12:00	.83	0.50	1383	3665	23.7	102	.00105	73	0.83	66	1.89	2.73	3.72
10/16/89 12:00	.19	0.10	555	4220	10.8	113	.00058	69	0.69	67	0.39	0.56	0.81
10/20/89 12:00	.22	0.11	646	4311	16.3	129	.00061	86	0.69	69	0.73	1.06	1.23
10/24/89 7:28	.44	0.22	1215	5526	12.8	142	.00003	99	0.69	72	0.69	1.00	1.01
10/24/89 10:13	.44	0.22	36	5563	0.0	142		84	0.69	72			
10/26/89 12:00													
10/27/89 10:15	.19	0.21	275	5838	4.5	146	.00082	92	1.52	72	0.92	1.32	1.45
10/31/89 12:00	.35	0.35	2066	7904	29.7	176	.00110	94	1.38	76	1.43	2.06	2.19
11/3/89 12:00	.46	0.46	1974	9878	17.1	193	.00048	90	1.38	77	1.07	1.55	1.71
11/6/89 12:00	.68	0.68	2929	12807	8.3	201	.00002	75	1.38	77	0.44	0.63	0.84
11/9/89 12:00	.27	0.27	1179	13986	3.5	205	-.00065	-167	1.38	73	-0.40	-0.58	0.35
11/14/89 15:00	.09	0.09	637	14624	5.6	210	-.00022	-272	1.38	64	-0.62	-0.90	0.33
11/16/89 15:00	.46	0.46	1335	15959	11.2	222	.00044	71	1.38	64	0.83	1.20	1.69
11/24/89 14:00	.24	0.24	2755	18714	12.5	234	-.00007	60	1.38	62	0.20	0.28	0.47
11/28/89 14:39	.30	0.30	1719	20433	9.2	243	.00046	54	1.38	62	0.26	0.37	0.69
11/28/89 15:11	.30	0.30	10	20443	0.1	243			1.38	62			
12/1/89 14:00													
12/2/89 16:46	.29	1.14	1835	22278	16.8	260	.00182	63	5.46	62	1.99	2.87	4.53
12/7/89 12:00	.43	1.68	11633	33911	101.8	362	-.00177	18	5.46	50	0.79	1.14	6.39
12/11/89 12:00	.80	3.04	17534	51445	153.0	515	.00258	28	5.30	43	2.25	3.25	11.52
12/13/89 14:30	.50	1.91	5795	57239	49.0	564	.00182	19	5.30	41	0.90	1.30	7.01
12/15/89 11:30	.81	2.74	7391	64630	51.8	616	.00089	45	4.66	41	2.62	3.78	8.32
12/22/89 12:00	.77	2.15	21786	86416	135.7	752	.00052	14	3.89	37	0.58	0.83	5.82
12/27/89 12:00	.67	1.89	13599	100014	76.4	828	.00155	28	3.89	36	0.90	1.30	4.60
12/29/89 12:00	1.33	3.74	10771	110785	37.2	865	.00091	71	3.89	37	2.76	3.98	5.60
1/2/90 12:00	.73	2.05	11828	122613	41.9	907	.00122	32	3.89	37	0.70	1.01	3.15
1/3/90 14:20	.71	1.98	3135	125748	20.4	927	.00164	40	3.89	37	1.55	2.23	5.60
1/3/90 15:33	.71	2.00	146	125894	1.1	929		34	3.89	37			
1/8/90 13:30													
1/10/90 12:03	.60	3.93	10983	136877	86.0	1015	.00050	6	9.10	34	0.55	0.79	13.35
1/12/90 10:05	.80	5.27	14556	151433	95.9	1110	.00158	26	9.10	34	2.72	3.92	15.06
1/16/90 10:00	.76	2.56	14732	166165	91.1	1202	.00191	30	4.66	33	1.41	2.03	6.87
1/19/90 8:00	.90	3.02	12667	178832	78.1	1280	.00082	36	4.66	34	2.00	2.88	8.07
1/22/90 10:30	.92	3.09	13800	192632	80.8	1360	.00208	31	4.66	33	1.67	2.41	7.84
1/24/90 14:00	.68	2.27	7022	199655	51.3	1412	.00124	21	4.66	33	1.06	1.53	7.20
1/25/90 6:00	.68	2.29	2196	201851	18.0	1430		25	4.66	33	1.41	2.04	8.15
1/26/90 15:00													

Table 20 Cont. Calculated operational data for Off-Gas Treatment Plot V3.

Date m/d/y h:mm	Calc. Qi/Qo = a	Calc. Qi (L/min)	Int Vol Air (L)	Cumul Vol Air (L)	Hexane Eq. THC (g)	Cum Hex Eq THC (g)	Calc K %O2/min	% THC Biodegraded	Air Flow Void Vol/day	Cum % THC Biodegraded	Biodegradation (mg/(kg day)	Biodegradation (g/(m3 day)	loading rate g/(m3 day)
2/1/90 16:30	.71	0.96	8337	210188	51.0	1481	.00059	37	1.85	33	0.66	0.95	2.53
2/4/90 16 30	.79	1.06	4570	214758	28.2	1509	.00054	37	1.85	33	0.72	1.04	2.83
2/12/90 15:00	.84	1.13	12884	227642	91.4	1600	.00206	63	1.85	35	1.51	2.18	3.47
2/21/90 8:00	.97	0.68	8483	236125	61.5	1662	.00118	92	0.97	37	1.36	1.96	2.13
2/24/90 10:30	.66	0.50	2214	238338	15.0	1677	.00092	98	1 04	37	0.99	1 43	1.46
2/28/90 10:00	.68	0.51	2937	241275	22.8	1700	.00113	97	1.05	38	1.16	1.68	1.72
3/3/90 11:00	.96	2.92	12773	254048	80.1	1780	.00205	87	4.19	40	4.77	6.88	7.93
3/3/90 11:06	.96	2.91	17	254066	0.1	1780			4.19	40			
3/6/90 12:30													
3/7/90 11:05	.31	0.22	294	254359	11.2	1791	.00077	34	0.97	40	0.85	1.22	3.59
3/7/90 13:54	.30	0.21	36	254395	1.4	1792	.00070	31	0.97	40	0.75	1.08	3.52
3/8/90 11:45	*.42*	*0.30*	*389*	*254784*	*12.5*	*1805*	*.00128*	*55*	*0.97*	*41*	*1.58*	*2.28*	*4.14*
3/8/90 15:26	.39	0.28	61	254845	1.7	1807	.00146	66	0.97	41	1.52	2.19	3.33
3/8/90 18:02	.40	0.28	43	254889	1.2	1808	.00137	63	0.97	41	1.48	2.14	3.43
3/8/90 21:57	.41	0.29	68	254956	1.8	1810	.00151	70	0.97	41	1.65	2.37	3.40
3/8/90 23:20	.42	0.29	24	254981	0.6	1810	.00143	74	0.97	41	1.73	2.49	3.37
3/9/90 8:50	.43	0.30	170	255151	4.6	1815	.00168	72	0.97	41	1.73	2.49	3.49
3/9/90 9:20	.43	0.30	9	255160	0.3	1815							

Table 21. Operational data for Background Plot V4.

Date m/d/y h:mm	Venting Time (days)	CO2 (%)	O2 (%)	THC (µL/L)	02+C02 (%)
10/4/89 12:04	0.08	2.6	17.5	44.0	20.1
10/10/89 14:00	6.16	2.0	18.5	380.0	20.5
10/12/89 12:00	8.08	2.2	18.4	410.0	20.6
10/16/89 12:00	12.08	2.3	18.0	180.0	20.3
10/20/89 12:00	16.08	1.0	20.0	9.0	21.0
10/24/89 8:31	19.93	1.5	19.0	8.5	20.5
10/24/89 10:13	20.01	Blowers off for Shutdown Test 1			
10/26/89 12:00	20.01	Blowers on			
10/27/89 9:53	20.92	1.6	18.8	0.0	20.4
10/31/89 12:00	25.01	1.3	19.3	0.0	20.6
11/3/89 12:00	28.01	1.2	19.4	ND	20.6
11/6/89 12:00	31.01	1.5	19.2	ND	20.7
11/9/89 12:00	34.01	1.5	19.5	ND	21.0
11/14/89 15:00	39.13	1.4	19.4	ND	20.8
11/16/89 15:00	41.13	0.9	20.0	ND	20.9
11/21/89 15:00	46.13	1.0	19.5	ND	20.5
11/24/89 14:00	49.09	0.7	20.4	ND	21.1
11/28/89 14:20	53.10	0.9	19.6	2.0	20.5
11/28/89 15:11	53.14	Blowers off for Shutdown Test 2			
12/1/89 14:00	53.14	Blowers on			
12/2/89 16:02	54.22	0.7	20.2	2.0	20.9
12/5/89 12:00	57.05	0.6	20.2	4.0	
12/7/89 12:00	59.05	0.7	20.2	ND	20.9
12/11/89 12:00	63.05	0.5	20.0	ND	20.5
12/13/89 14:30	65.16	0.5	20.5	2.0	21.0
12/15/89 11:30	67.03	0.4	20.2	ND	20.6
12/22/89 12:00	74.05	0.2	21.0	ND	21.2
12/27/89 12:00	79.05	0.4	20.8	ND	21.2
12/29/89 12:00	81.05	0.5	20.0	ND	20.5
1/2/90 12:00	85.05	0.5	20.2	ND	20.7
1/3/90 13:55	86.13	0.3	20.5	ND	20.8
1/3/90 15:33	86.20	Blowers off for Shutdown Test 3			
1/8/90 13:30	86.20	Blowers on			
1/16/90 10:00	94.06	0.6	20.2	ND	20.8
1/19/90 8:00	96.97	0.7	20.2	2.0	20.9
1/22/90 10:30	100.08	0.7	20.2	ND	20.9
1/24/90 14:00	102.22	0.7	20.2	3.8	20.9
1/25/90 6:00	102.89	Blowers off for Shutdown Test 3A			
1/26/90 15:00	102.89	Blowers on			
2/1/90 16:30	108.95	0.7	20.3	1.0	21.0
2/4/90 16:30	111.95	0.6	20.5	3.8	21.1
2/9/90 8:00	116.60	0.9	20.0	2.0	20.9
2/12/90 15:00	119.89	0.8	20.1	ND	20.9
2/21/90 8:00	128.60	0.6	20.2	2.0	20.8
2/24/90 10:30	131.70	0.3	20.5	2.0	20.8
2/28/90 10:00	135.68	0.7	20.2	4.3	20.9
3/3/90 11:00	138.72	0.6	20.3	1.0	20.9
3/3/90 11:06	138.73	Blowers off (V3&V4) for Shutdown Test 4			
3/6/90 12:30	138.73	Blowers on (V3 &V4) Direct JP-4 injection			
3/9/90 9:20	141.60	Blowers off (V3) for Shutdown Test 4a			
3/12/90 9:15	141.60	Blowers on (V3)			
3/13/90 7:53	142.54	1.1	19.8	ND	20.9
3/25/90 8:30	154.57	1.0	20.0	0.8	21.0
3/30/90 8:30	159.57	1.0	20.0	0.9	21.0
4/9/90 10:00	169.63	0.8	20.1	1.7	20.9
4/13/90 9:30	173.61	0.8	20.0	2.5	20.8
4/24/90 9:30	184.61	1.2	19.5	1.0	20.7
4/24/90 13:00	184.76	Blowers off for Shutdown Test 5			
5/2/90 9:30	184.76	Blowers on			

Appendix D

nysical, Nutrient, and Hydrocarbon Data

for Soil and Water Samples

Table 22. Summary of physical analyses of soil samples from Tyndall AFB.

	% Hydrometer							O.C.	O.C.	O.C.	CEC	CEC
	Sand	Silt	Clay	Texture	pH	pH	pH	%	%	%	meq/100g	meq/100g
Location	Jul/Sep/89	Jul/Sep/89	Jul/Sep/89	Jul/Sep/89	Jul/Sep/89	Dec-89	Apr-90	Jul/Sep/89	Dec-89	Apr-90	Jul/Sep/89	Apr-90
V1-1, 1'	95	2	3	Sand	6.3		6.5	0.82		0.88	2.8	7.7
V1-1, 2'	92	5	3	Sand	5.3		5.5	0.27		0.4	<DL	
V1-1, 3'	96	2	2	Sand	5.6		5.6	0.15		0.21	0.5	<DL
V1-1, 4'	95	2	2	Sand	5.3		5.9	0.09		0.1	0.4	2.28
V1-1, 5'	97	1	2	Sand	5.4		6	0.18		0.03	0.6	<DL
V1-3, 1'	92	4	4	Sand	6.1	6.4	6.3	0.91	0.81	0.57	3.4	2.2
V1-3, 2'	96	2	2	Sand	6.4	6.5	6.7	0.22	0.36	0.29	0.4	1.69
V1-3, 3'	97	1	2	Sand	6.4	6.5	6.4	0.16	0.2	0.12	0.4	<DL
V1-3, 4'	96	2	2	Sand	5.8	6.7	6.5	0.16	0.1	0.16	0.3	0.47
V1-3, 5'	98	1	1	Sand	6	7	6.5	0.04	0.08	0.04	0.1	9.98
V2-1, 1'	94	3	3	Sand	6.2		6.1	0.86		0.57	3.3	4.05
V2-1, 2'	96	2	2	Sand	5.7		5.6	0.26		0.21	0.6	4.02
V2-1, 3'	96	2	2	Sand	5.7		5.4	0.33		0.17	0.8	0.53
V2-1, 4'	98	1	1	Sand	5.9		5.2	0.11		0.07	0.1	
V2-1, 5'	-	-	-	Sand	-		5.9	-		0.15	-	<DL
V2-3, 1'	95	3	2	Sand	6.2	6.1	6.6	0.68	0.72	0.53	2.3	3.83
V2-3, 2'	96	2	2	Sand	6	6.1	6.1	0.26	0.41	0.92	0.7	3.56
V2-3, 3'	97	1	2	Sand	6.1	6	6.2	0.2	0.13	0.25	0.3	1.93
V2-3, 4'	97	1	2	Sand	6	5.2	5.8	0.12	0.93	0.1	0.2	1.28
V2-3, 5'	97	1	2	Sand	5.4	5.1	7.6	0.44	0.45	3.33	1.6	
V3, 1'	96	2	2	Sand	5.4		7.1	0.53		0.53	1.7	<DL
V3, 2'	96	2	2	Sand	5.2		5.7	0.73		0.45	1.9	0.14
V3, 3'	95	3	2	Sand	4.6		6.6	0.43		0.41	1	1.64
V4, 1'	97	1	2	Sand	6		5.5	0.49		0.45	1.1	2.59
V4, 2'	96	2	2	Sand	5		5.3	0.85		0.5	2.4	4.16
V4, 3'	97	1	2	Sand	4.1		5.7	0.78		0.46	1.7	2.1

Table 23. Summary of nutrient analyses and acetylene reduction tests for soil and water samples from Tyndall AFB.

Location of Soil Samples	PO4-P mg P/kg Jul/Sep/89	PO4-P mg P/kg Dec-89	PO4-P mg P/kg Apr-90	Tot-P mg P/kg Jul/Sep/89	Tot-P mg P/kg Dec-89	Tot-P mg P/kg Apr-90	NO3+NO2-N mg N/kg Jul/Sep/89	NO3+NO2-N mg N/kg Dec-89	NO3+NO2-N mg N/kg Apr-90	NH4-N mg N/kg Jul/Sep/89	NH4-N mg N/kg Dec-89	NH4-N mg N/kg Apr-90
V1-1, 1'	<0.7		<0.7	24		40	1.45		0.7	2.3		61.91
V1-1, 2'	<0.7		1.91	17		25	1.23		1.25	2		3.45
V1-1, 3'	<0.7		<0.7	17		<20	1.05		<0.5	2.8		4.82
V1-1, 4'	<0.7		<0.7	22		<20	<0.5		<0.5	2.3		1.95
V1-1, 5'	<0.7			22		21	<0.5			3.2		7.42
V1-3, 1'	<0.7	<0.7	<0.7	30	39.3	<20	0.96	<0.5	1.48	1.3	2.3	5.37
V1-3, 2'	<0.7	<0.7	<0.7	<15	14.5	<20	0.97	<0.5	1.38	1.3	1	3.45
V1-3, 3'	4.45	<0.7	<0.7	<15	10.3	<20	0.83	<0.5	0.51	1.4	30.8	1.14
V1-3, 4'	<0.7	<0.7	<0.7	41.7	<7.5	<20	<0.5	1.5	<0.5	1	3.2	13.03
V1-3, 5'	<0.7	<0.7	<0.7	<15	19	<20	<0.5	<0.5	1.59	1.6	1.3	2.36
V2-1, 1'	<0.7		<0.7	25		29	1.42		1.54	2.8		2.36
V2-1, 2'	<0.7		<0.7	<15		<20	4.58		0.72	0.7		4.82
V2-1, 3'	<0.7		<0.7	15		<20	13.98		0.84	1.3		4.14
V2-1, 4'	<0.7		<0.7	21.3		<20	<0.5		1.45	1.3		2.09
V2-1, 5'	<0.7			-		25	<0.5			1.7		45.88
V2-3, 1'	<0.7	<0.7	<0.7	21	29.9	23	0.97	4.9	5.54	1.2	1.11	4.96
V2-3, 2'	<0.7	<0.7	<0.7	<15	14.1	29	<0.5	<0.5	<0.5	2.3	46.5	63.28
V2-3, 3'	<0.7	<0.7	<0.7	<15	11.6	32	0.85	<0.5	<0.5	1.1	5.2	78.33
V2-3, 4'	<0.7	<0.7	<0.7	20.3	41.3	<20	<0.5	<0.5	<0.5	1.2	12.1	8.93
V2-3, 5'	<0.7	<0.7	<0.7	<15	13.2	<20	1.2	<0.5	<0.5	2.6	32.3	4.82
V3, 1'	<0.7		<0.7	30		36	0.98		1.76	1.3		8.24
V3, 2'	<0.7		<0.7	27		36	0.34		0.63	1.3		6.88
V3, 3'	<0.7		1.83	22		70	1.93		0.93	0.6		3.45
V4, 1'	<0.7		14.57	27		61	2.39		2.25	1.2		495.9
V4, 2'	<0.7		9.83	36		106	3.32		1.24	1.4		2.77
V4, 3'	<0.7		<0.7	42		29	3.53		3.71	0.6		6.19
Water Samples	mg P/L	mg P/L	mg P/L	mg P/L	mg P/L	mg P/L	mg N/L	mg N/L	mg N/L	mg N/L	mg N/L	mg N/L
V1-1	<0.07		14				0.17		<1.0	0.19		961
V1-2	<0.07		<4.2				0.13		<3.0	0.23		1372
V1-3	<0.07		68.3				<0.05		18.3	0.25		10623
V2-1	<0.07	<0.07	87.5				0.27	<3.9*	33.2	0.66	1086	4177
V2-2	<0.07						<3.9*			6.17		19861
V2-3	<0.07		<21				0.11		<15	0.33		1645
V3	<0.07		66.18				0.17		1.54	0.17		59
V4	<0.07		<2.1				8.01		4.37	8.61		17

Table 23 Cont. Summary of nutrient analyses and acetylene reduction tests for soil and water samples from Tyndall AFB.

Location of Soil Samples	TKN mg N/kg Jul/Sep/89	TKN mg N/kg Dec-89	TKN mg N/kg Apr-90	Organic-N mg N/kg Jul/Sep/89	Organic-N mg N/kg Dec-89	Organic-N mg N/kg Apr-90	Acet- Reduc. mmole/kg•h Jul/Sep/89	Acet- Reduc. mmole/kg•h Dec-89	Acet- Reduc. nmole/kg•h Apr-90
V1-1, 1'	39.1			36.8			743		13
V1-1, 2'	51.3			49.3			1007		8
V1-1, 3'	73			70.2			1		11
V1-1, 4'	60.8			58.5					12
V1-1, 5'	86.5			83.3					12
V1-3, 1'	181.3	205.7		180	203.4		371	581	11
V1-3, 2'	71.6	45.9		70.3	44.9		118	16	10
V1-3, 3'	60.8	79.7		59.4	48.9		1	21	67
V1-3, 4'	43.2	32.3		42.2	29.1			2	12
V1-3, 5'	45.9	55.3		44.3	54			3	8
V2-1, 1'	194.8			192			2		11
V2-1, 2'	52.6			51.9			2		12
V2-1, 3'	31			29.7			7		11
V2-1, 4'	45.9			44.6					5
V2-1, 5'	45.9			44.2					12
V2-3, 1'	128.5	167.7		127.3	166.59		2		13
V2-3, 2'	70.2	132.5		67.9	86		66		106
V2-3, 3'	56.7	109.5		55.6	104.3		85		15
V2-3, 4'	63.5	540.8		62.3	528.7				15
V2-3, 5'	114.9	85.1		112.3	52.8				9
V3, 1'	104.1			102.8			15		10
V3, 2'	142			140.7			24		9
V3, 3'	59.4			58.8			29		7
V4, 1'	93.3			92.1			28		13
V4, 2'	161			159.6			24		10
V4, 3'	142			141.4			36		10
Water Samples	mg N/L	mg N/L	mg N/L	mg N/L	mg N/L	mg N/L			
V1-1	3.2								
V1-2	3.1								
V1-3	-								
V2-1	4.8	1062							
V2-2	2.7								
V2-3	-								
V3	-								
V4	9.3								

Table 24. Hydrocarbon concentrations determined from methylene chloride extracts.

Location of Soil Samples	Hexane Equivalent (mg/kg) Initial Sep-89	Hexane Equivalent (mg/kg) Final Apr-90	Weighted Average (mg/kg) Initial Sep-89	Weighted Average (mg/kg) Final Apr-90	Combined Average (mg/kg) Initial Sep-89	Combined Average (mg/kg) Final Apr-90
V1-1, 1'	6,430	4,540	4,796	4,556	5,892	4,542
V1-1, 2'	95	2,467	85	2,484	87	2,468
V1-1, 3'	475	2,069	359	2,100	435	2,070
V1-1, 4'	80	2,032	63	2,038	72	2,033
V1-1, 5'	60	28	51	32	55	29
V1-1, 6'	35	11	31	14	32	12
V1-1, 7'	100	23,716	87	24,035	92	23,717
V1-2, 1'	11,803	184	8,826	186	10,815	185
V1-2, 2'	9,933	3,230	7,589	3,229	9,102	3,231
V1-2, 3'	8,371	2,519	6,732	2,529	8,129	2,520
V1-2, 4'	10,272	1,687	7,842	1,689	9,413	1,688
V1-2, 5'	274	11	206	12	251	13
V1-2, 6'	1,491	117	1,123	128	1,366	118
V1-2, 7'	75	24	61	29	69	26
V1-3, 1'	13,046	5,202	9,538	5,174	11,955	5,203
V1-3, 2'	8,323	6,015	6,124	6,022	7,627	6,016
V1-3, 3'	7,432	2,417	5,507	2,424	6,811	2,418
V1-3, 4'	324	490	263	493	297	491
V1-3, 5'	109	6	99	6	100	7
V1-3, 6'	218	74	181	78	200	76
V1-3, 7'	157	17	140	19	144	18
V2-1, 1'	153	13	115	15	138	13
V2-1, 2'	8,828	10,846	6,529	10,821	8,449	10,847
V2-1, 3'	11,652	929	8,719	935	4,430	931
V2-1, 4'	20,700	5,231	15,478	5,246	19,289	5,232
V2-1, 5'	1,912	63	1,134	67	892	64
V2-1, 6'	102	24	78	28	94	25
V2-1, 7'	84	39	65	44	77	41
V2-2, 1'	155	20	108	21	142	22
V2-2, 2'	8,435	3,057	6,183	3,054	7,729	3,059
V2-2, 3'	18,469	7,106	13,797	7,106	16,924	7,107
V2-2, 4'	20,350	23,216	15,250	23,431	18,648	23,257
V2-2, 5'	975	6,192	2,120	6,291	2,613	6,194
V2-2, 6'	562	25	408	30	515	26
V2-2, 7'	81	22	62	42	75	23
V2-3, 1'	35	21	25	24	32	22
V2-3, 2'	6,601	5,559	4,861	5,554	6,049	5,560
V2-3, 3'	3,372	1,626	2,468	1,631	3,090	1,627
V2-3, 4'	13,601	4,757	10,118	4,765	12,464	4,758
V2-3, 5'	121	3,885	86	3,935	111	3,886
V2-3, 6'	2,215	13	1,640	20	2,030	14
V2-3, 7'	36	31	26	38	33	32
V3, 1'	58	16	67	16		17
V3, 2'	381	64	284	67		65
V3, 3'	9	18	284	18		20
V3, 4'	39	15	14	15		16
V3, 5'		622	45	625		623
V4, 1'	120	27	95	27		28
V4, 2'	236	44	205	48		45
V4, 3'	32	27	29	27		28
V4, 4'	95	85	107	86		86
V4, 5'	42	25	40	26		26
Location of Water Samples	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
V1-1		13,053		14,361		13,253
V1-2						
V1-3		7,341		8,450		7,511
V2-1		2,249,101		2,264,438		2,249,278
V2-2		920,037		926,460		920,335
V2-3		311,780		313,393		311,955
V3		13,944		16,177		14,430
V4		3,010		2,975		3,180

Appendix E

Respiration Test 1 Data

Table 25. Summarized data for Respiration Test 1.

mo/day/yr/time		Elapsed Time (min)	Location	CO2 (%)	O2 (%)	ln O2	CO2+O2 (%)	Norm CO2	Norm O2
10/24/89	10:13	Blowers Off							
10/24/89	9:42	0	V1-1A	5.4	13.9	2.632	19.3	1	1
10/24/89	10:47	34	V1-1A	5.3	13.2	2.580	18.5	0.98	0.95
10/24/89	13:07	174	V1-1A	5.9	12	2.485	17.9	1.09	0.863
10/24/89	15:25	312	V1-1A	5.9	11	2.398	16.9	1.09	0.791
10/24/89	18:03	470	V1-1A	7.1	8.5	2.140	15.6	1.31	0.612
10/24/89	22:26	733	V1-1A	8.3	5.9	1.775	14.2	1.55	0.424
10/25/89	3:28	1035	V1-1A	10.7	4	1.386	14.7	2	0.288
10/25/89	8:49	1356	V1-1A	11.5	2.5	0.916	14.0	2.14	0.18
10/25/89	14:52	1719	V1-1A	12.2	0.8	-0.223	13.0		
10/25/89	20:50	2077	V1-1A	13.9	0.5	-0.693	14.4		
10/26/89	9:02	2809	V1-1A	13.9	0.3	-1.204	14.2		
10/24/89	9:52	0	V1-1B	4.4	15	2.708	19.4	1	1
10/24/89	10:50	37	V1-1B	4.4	14.5	2.674	18.9	1	0.967
10/24/89	13:09	176	V1-1B	4.8	13.8	2.625	18.6	1.09	0.92
10/24/89	15:27	314	V1-1B	5.3	13.5	2.603	18.8	1.21	0.9
10/24/89	18:07	474	V1-1B	5.5	12	2.485	17.5	1.25	0.8
10/24/89	22:32	739	V1-1B	6.6	10.5	2.351	17.1	1.5	0.7
10/25/89	3:34	1041	V1-1B	7.3	9.2	2.219	16.5	1.66	0.613
10/25/89	8:52	1359	V1-1B	9.0	7	1.946	16.0	2.04	0.467
10/25/89	14:57	1724	V1-1B	10.0	4.9	1.589	14.9	2.28	0.327
10/25/89	21:01	2088	V1-1B	11.0	3.3	1.194	14.3	2.51	0.22
10/26/89	9:06	2813	V1-1B	13.6	0.8	-0.223	14.4		
10/24/89	9:55	0	V1-1C	4.5	14.5	2.674	19.0	1	1
10/24/89	10:53	40	V1-1C	4.8	14	2.639	18.8	1.06	0.966
10/24/89	13:14	181	V1-1C	4.9	13.6	2.610	18.5	1.09	0.938
10/24/89	15:30	317	V1-1C	4.9	13.7	2.617	18.6	1.09	0.945
10/24/89	18:09	476	V1-1C	5.7	12.2	2.501	17.9	1.27	0.841
10/24/89	22:35	742	V1-1C	6.6	11.2	2.416	17.8	1.47	0.772
10/25/89	3:37	1044	V1-1C	7.1	10.2	2.322	17.3	1.58	0.703
10/25/89	8:56	1363	V1-1C	8.3	8	2.079	16.3	1.85	0.552
10/25/89	15:00	1727	V1-1C	8.6	6.1	1.808	14.7	1.92	0.421
10/25/89	21:05	2092	V1-1C	12.5	4.3	1.459	16.8	2.78	0.297
10/26/89	9:10	2817	V1-1C	13.0	1.2	0.182	14.2	2.91	0.083
10/24/89	10:00	0	V1-2A	2.0	18.5	2.918	20.5	1	1
10/24/89	10:56	43	V1-2A	2.7	16.5	2.803	19.2	1.35	0.892
10/24/89	13:19	186	V1-2A	3.8	13.4	2.595	17.2	1.9	0.724
10/24/89	15:33	320	V1-2A	4.5	12	2.485	16.5	2.25	0.649
10/24/89	18:13	480	V1-2A	5.5	8.8	2.175	14.3	2.75	0.476
10/24/89	22:40	747	V1-2A	7.3	6	1.792	13.3	3.63	0.324
10/25/89	3:42	1049	V1-2A	9.0	4.3	1.459	13.3	4.51	0.232
10/25/89	9:01	1368	V1-2A	11.7	2.2	0.788	13.9	5.83	0.119
10/25/89	15:03	1730	V1-2A	11.2	0.8	-0.223	12.0		
10/25/89	21:08	2095	V1-2A	14.7	0.5	-0.693	15.2		
10/26/89	9:14	2821	V1-2A	13.9	0.4	-0.916	14.3		

mo/day/yr/time		Elapsed Time (min)	Location	CO2 (%)	O2 (%)	ln O2	CO2+O2 (%)	Norm CO2	Norm O2
10/24/89	10:02	0	V1-2B	4.4	15	2.708	19.4	1	1
10/24/89	10:58	45	V1-2B	4.6	14.5	2.674	19.1	1.05	0.967
10/24/89	13:24	191	V1-2B	4.9	13.8	2.625	18.7	1.1	0.92
10/24/89	15:36	323	V1-2B	5.0	13.2	2.580	18.2	1.14	0.88
10/24/89	18:16	483	V1-2B	5.8	11.5	2.442	17.3	1.32	0.767
10/24/89	22:44	751	V1-2B	6.7	10.3	2.332	17.0	1.52	0.687
10/25/89	3:45	1052	V1-2B	7.5	8.9	2.186	16.4	1.7	0.593
10/25/89	9:05	1372	V1-2B	9.5	6.5	1.872	16.0	2.16	0.433
10/25/89	15:06	1733	V1-2B	9.9	3.8	1.335	13.7	2.25	0.253
10/25/89	21:12	2099	V1-2B	14.2	2.1	0.742	16.3	3.22	0.14
10/26/89	9:17	2824	V1-2B	14.4	0.2	-1.609	14.6		
10/24/89	10:04	0	V1-2C	7.0	12	2.485	19.0	1	1
10/24/89	11:00	47	V1-2C	6.4	12	2.485	18.4	0.91	1
10/24/89	13:26	193	V1-2C	6.9	11.5	2.442	18.4	0.98	0.958
10/24/89	15:38	325	V1-2C	6.9	12	2.485	18.9	0.98	1
10/24/89	18:19	486	V1-2C	7.3	10.4	2.342	17.7	1.04	0.867
10/24/89	22:47	754	V1-2C	7.9	10	2.303	17.9	1.13	0.833
10/25/89	3:50	1057	V1-2C	8.0	9.2	2.219	17.2	1.15	0.767
10/25/89	9:10	1377	V1-2C	10.5	7.4	2.001	17.9	1.51	0.617
10/25/89	15:09	1736	V1-2C	10.2	5	1.609	15.2	1.47	0.417
10/25/89	21:16	2103	V1-2C	13.9	3.4	1.224	17.3	1.99	0.283
10/26/89	9:20	2827	V1-2C	14.4	0.3	-1.204	14.7		
10/24/89	10:06	0	V1-3A	1.5	19	2.944	20.5	1	1
10/24/89	11:04	51	V1-3A	2.1	17.2	2.845	19.3	1.45	0.905
10/24/89	13:29	196	V1-3A	3.0	15.8	2.760	18.8	2.03	0.832
10/24/89	15:43	330	V1-3A	3.4	15	2.708	18.4	2.34	0.789
10/24/89	18:22	489	V1-3A	4.3	13	2.565	17.3	2.98	0.684
10/24/89	22:50	757	V1-3A	5.6	11	2.398	16.6	3.86	0.579
10/25/89	3:54	1061	V1-3A	6.7	8.8	2.175	15.5	4.6	0.463
10/25/89	9:14	1381	V1-3A	9.7	6	1.792	15.7	6.7	0.316
10/25/89	15:14	1741	V1-3A	9.1	4	1.386	13.1	6.28	0.211
10/25/89	21:20	2107	V1-3A	13.9	1.2	0.182	15.1	9.57	0.063
10/26/89	9:23	2830	V1-3A	13.9	0.1	-2.303	14.0		
10/24/89	10:09	0	V1-3B	4.4	14.5	2.674	18.9	1	1
10/24/89	11:08	55	V1-3B	3.2	16.1	2.779	19.3	0.73	1.11
10/24/89	13:31	198	V1-3B	3.6	15.5	2.741	19.1	0.82	1.069
10/24/89	15:46	333	V1-3B	3.9	14.8	2.695	18.7	0.89	1.021
10/24/89	18:25	492	V1-3B	5.1	12.5	2.526	17.6	1.16	0.862
10/24/89	22:55	762	V1-3B	6.3	10.8	2.380	17.1	1.43	0.745
10/25/89	3:59	1066	V1-3B	7.5	9	2.197	16.5	1.7	0.621
10/25/89	9:19	1386	V1-3B	10.1	6.3	1.841	16.4	2.29	0.434
10/25/89	15:16	1743	V1-3B	10.6	3.4	1.224	14.0	2.4	0.234
10/25/89	21:24	2111	V1-3B	14.7	1.7	0.531	16.4	3.34	0.117
10/26/89	9:27	2834	V1-3B	14.7	0.1	-2.303	14.8		

mo/day/yr/time		Elapsed Time (min)	Location	CO2 (%)	O2 (%)	ln O2	CO2+O2 (%)	Norm CO2	Norm O2
10/24/89	10:10	0	V1-3C	3.0	16.5	2.803	19.5	1	1
10/24/89	11:10	57	V1-3C	4.7	13.7	2.617	18.4	1.57	0.83
10/24/89	13:33	200	V1-3C	5.1	13	2.565	18.1	1.7	0.788
10/24/89	15:48	335	V1-3C	5.5	13	2.565	18.5	1.83	0.788
10/24/89	18:28	495	V1-3C	6.6	10.8	2.380	17.4	2.19	0.655
10/24/89	22:58	765	V1-3C	7.6	9.6	2.262	17.2	2.52	0.582
10/25/89	4:03	1070	V1-3C	8.4	8.4	2.128	16.8	2.81	0.509
10/25/89	9:23	1390	V1-3C	11.3	6	1.792	17.3	3.75	0.364
10/25/89	15:19	1746	V1-3C	11.5	3	1.099	14.5	3.84	0.182
10/25/89	21:29	2116	V1-3C	14.7	2	0.693	16.7	4.9	0.121
10/26/89	9:30	2837	V1-3C	15.3	0.1	-2.303	15.4		
10/24/89	9:04	0	V2-1A	0.5	19.8	2.986	20.3	1	1
10/24/89	11:14	61	V2-1A	0.6	19.5	2.970	20.1	1.33	0.985
10/24/89	13:37	204	V2-1A	1.3	18.5	2.918	19.8	2.89	0.934
10/24/89	15:50	337	V2-1A	1.2	18.5	2.918	19.7	2.67	0.934
10/24/89	18:38	505	V2-1A	1.7	18	2.890	19.7	3.78	0.909
10/24/89	23:05	772	V2-1A	1.9	18	2.890	19.9	4.22	0.909
10/25/89	4:07	1074	V2-1A	2.7	16	2.773	18.7	6	0.808
10/25/89	9:28	1395	V2-1A	2.3	17	2.833	19.3	5.11	0.859
10/25/89	15:24	1751	V2-1A	5.9	8.6	2.152	14.5	13	0.434
10/25/89	21:35	2122	V2-1A	7.6	6.2	1.825	13.8	16.8	0.313
10/26/89	9:44	2851	V2-1A	10.5	2.6	0.956	13.1	23.4	0.131
10/24/89	9:06	0	V2-1B	4.3	14.7	2.688	19.0	1	1
10/24/89	11:17	64	V2-1B	4.5	13.3	2.588	17.8	1.05	0.905
10/24/89	13:42	209	V2-1B	5.6	12.2	2.501	17.8	1.3	0.83
10/24/89	15:53	340	V2-1B	5.9	11.6	2.451	17.5	1.37	0.789
10/24/89	18:39	506	V2-1B	7.2	9.2	2.219	16.4	1.67	0.626
10/24/89	23:07	774	V2-1B	8.4	8	2.079	16.4	1.96	0.544
10/25/89	4:11	1078	V2-1B	9.0	7	1.946	16.0	2.1	0.476
10/25/89	9:33	1400	V2-1B	12.4	5	1.609	17.4	2.9	0.34
10/25/89	15:29	1756	V2-1B	11.7	3.5	1.253	15.2	2.71	0.238
10/25/89	21:43	2130	V2-1B	13.6	3	1.099	16.6	3.16	0.204
10/26/89	9:50	2857	V2-1B	14.4	0.2	-1.609	14.6		
10/24/89	9:08	0	V2-1C	5.6	12.5	2.526	18.1	1	1
10/24/89	11:20	67	V2-1C	5.6	12.2	2.501	17.8	1	0.976
10/24/89	13:44	211	V2-1C	6.3	12	2.485	18.3	1.13	0.96
10/24/89	15:58	345	V2-1C	6.5	11	2.398	17.5	1.16	0.88
10/24/89	18:44	511	V2-1C	7.4	10	2.303	17.4	1.32	0.8
10/24/89	23:11	778	V2-1C	8.2	8.5	2.140	16.7	1.48	0.68
10/25/89	4:14	1081	V2-1C	8.6	8.1	2.092	16.7	1.55	0.648
10/25/89	9:37	1404	V2-1C	11.7	6	1.792	17.7	2.09	0.48
10/25/89	15:30	1757	V2-1C	11.0	4.8	1.569	15.8	1.98	0.384
10/25/89	21:50	2137	V2-1C	11.5	4.1	1.411	15.6	2.06	0.328
10/26/89	9:55	2862	V2-1C	14.2	0.2	-1.609	14.4		

mo/day/yr/time	Elapsed Time (min)	Location	CO2 (%)	O2 (%)	ln O2	CO2+O2 (%)	Norm CO2	Norm O2
10/24/89 9:10	0	V2-2A	0.2	20.2	3.006	20.4	1	1
10/24/89 11:25	72	V2-2A	0.2	20.2	3.006	20.4	1	1
10/24/89 13:46	213	V2-2A	0.3	20	2.996	20.3	1.67	0.99
10/24/89 16:08	355	V2-2A	0.4	20	2.996	20.4	2.33	0.99
10/24/89 18:47	514	V2-2A	0.5	19	2.944	19.5	3	0.941
10/24/89 23:15	782	V2-2A	0.5	20	2.996	20.5	3.33	0.99
10/25/89 4:19	1086	V2-2A	0.9	18.2	2.901	19.1	6	0.901
10/25/89 9:40	1407	V2-2A	0.7	19.5	2.970	20.2	4.33	0.965
10/25/89 15:37	1764	V2-2A	2.2	13.9	2.632	16.1	14.7	0.688
10/25/89 21:58	2145	V2-2A	3.9	10.8	2.380	14.7	25.7	0.535
10/26/89 9:59	2866	V2-2A	6.1	5	1.609	11.1	40.4	0.248
10/24/89 9:17	0	V2-2B	3.3	16.3	2.791	19.6	1	1
10/24/89 11:27	74	V2-2B	3.1	16	2.773	19.1	0.94	0.982
10/24/89 13:48	215	V2-2B	3.8	14.6	2.681	18.4	1.14	0.896
10/24/89 16:10	357	V2-2B	4.7	13	2.565	17.7	1.41	0.798
10/24/89 18:51	518	V2-2B	5.4	12	2.485	17.4	1.64	0.736
10/24/89 23:18	785	V2-2B	6.7	10.5	2.351	17.2	2.02	0.644
10/25/89 4:26	1093	V2-2B	7.3	8	2.079	15.3	2.2	0.491
10/25/89 9:52	1419	V2-2B	9.3	6.7	1.902	16.0	2.81	0.411
10/25/89 15:40	1767	V2-2B	10.2	4.5	1.504	14.7	3.1	0.276
10/25/89 22:00	2147	V2-2B	12.8	2.8	1.030	15.6	3.87	0.172
10/26/89 10:02	2869	V2-2B	13.9	0.2	-1.609	14.1		
10/24/89 9:26	0	V2-2C	5.0	14	2.639	19.0	1	1
10/24/89 11:28	75	V2-2C	5.0	13.2	2.580	18.2	1.01	0.943
10/24/89 13:50	217	V2-2C	5.8	12.5	2.526	18.3	1.17	0.893
10/24/89 16:03	350	V2-2C	6.3	11	2.398	17.3	1.27	0.786
10/24/89 18:54	521	V2-2C	7.4	9.8	2.282	17.2	1.49	0.7
10/24/89 23:23	790	V2-2C	8.4	8.1	2.092	16.5	1.71	0.579
10/25/89 4:31	1098	V2-2C	8.5	6.5	1.872	15.0	1.72	0.464
10/25/89 9:54	1421	V2-2C	11.8	3.6	1.281	15.4	2.39	0.257
10/25/89 15:43	1770	V2-2C	11.0	3.5	1.253	14.5	2.21	0.25
10/25/89 22:05	2152	V2-2C	13.3	1.7	0.531	15.0	2.69	0.121
10/26/89 10:07	2874	V2-2C	13.6	0.1	-2.303	13.7		
10/24/89 9:29	0	V2-3A	0.8	19.5	2.970	20.3	1	1
10/24/89 11:30	77	V2-3A	1.1	18.5	2.918	19.6	1.47	0.949
10/24/89 13:52	219	V2-3A	1.6	17.7	2.874	19.3	2.13	0.908
10/24/89 16:16	363	V2-3A	2.2	16.5	2.803	18.7	2.93	0.846
10/24/89 18:58	525	V2-3A	2.3	16.6	2.809	18.9	3.07	0.851
10/24/89 23:27	794	V2-3A	2.8	15.5	2.741	18.3	3.73	0.795
10/25/89 4:34	1101	V2-3A	4.1	12.5	2.526	16.6	5.47	0.641
10/25/89 9:58	1425	V2-3A	4.0	13.1	2.573	17.1	5.33	0.672
10/25/89 15:46	1773	V2-3A	7.0	6.5	1.872	13.5	9.38	0.333
10/25/89 22:09	2156	V2-3A	8.6	4.9	1.589	13.5	11.5	0.251
10/26/89 10:12	2879	V2-3A	12.2	1.1	0.095	13.3	16.3	0.056

mo/day/yr/time	Elapsed Time (min)	Location	CO2 (%)	O2 (%)	ln O2	CO2+O2 (%)	Norm CO2	Norm O2
10/24/89 9:30	0	V2-3B	4.4	14.8	2.695	19.2	1	1
10/24/89 11:32	79	V2-3B	4.4	14.2	2.653	18.6	1	0.959
10/24/89 13:54	221	V2-3B	4.0	14.8	2.695	18.8	0.91	1
10/24/89 16:18	365	V2-3B	5.5	12	2.485	17.5	1.25	0.811
10/24/89 19:00	527	V2-3B	6.3	11	2.398	17.3	1.43	0.743
10/24/89 23:29	796	V2-3B	7.5	9.5	2.251	17.0	1.7	0.642
10/25/89 4:37	1104	V2-3B	7.9	7.2	1.974	15.1	1.78	0.486
10/25/89 10:00	1427	V2-3B	10.6	5.3	1.668	15.9	2.4	0.358
10/25/89 15:50	1777	V2-3B	11.0	3.8	1.335	14.8	2.49	0.257
10/25/89 22:15	2162	V2-3B	13.9	2.3	0.833	16.2	3.15	0.155
10/26/89 10:17	2884	V2-3B	14.4	0.4	-0.916	14.8		
10/24/89 9:32	0	V2-3C	7.2	10	2.303	17.2	1	1
10/24/89 11:34	81	V2-3C	7.6	10	2.303	17.6	1.06	1
10/24/89 13:57	224	V2-3C	7.9	8.6	2.152	16.5	1.09	0.86
10/24/89 16:25	372	V2-3C	5.5	13.2	2.580	18.7		
10/24/89 19:04	531	V2-3C	8.2	8.5	2.140	16.7		
10/24/89 23:34	801	V2-3C	10.0	5.5	1.705	15.5		
10/25/89 4:42	1109	V2-3C	11.8	3.4	1.224	15.2		
10/25/89 10:05	1432	V2-3C	14.4	1.5	0.405	15.9		
10/25/89 15:55	1782	V2-3C	14.2	0.5	-0.693	14.7		
10/25/89 22:18	2165	V2-3C	15.3	0.4	-0.916	15.7		
10/26/89 10:20	2887	V2-3C	15.3	0.1	-2.303	15.4		
10/24/89 7:59	0	V3A	2.0	18.5	2.918	20.5	1	1
10/24/89 11:40	87	V3A	1.9	18	2.890	19.9	0.95	0.973
10/24/89 14:02	229	V3A	2.0	18.2	2.901	20.2	0.98	0.984
10/24/89 19:14	541	V3A	2.3	18.2	2.901	20.5	1.15	0.984
10/25/89 11:11	1498	V3A	2.4	17.8	2.879	20.2	1.2	0.962
10/26/89 10:43	2910	V3A	2.6	17.5	2.862	20.1	1.28	0.946
10/24/89 8:01	0	V3B	2.3	18.2	2.901	20.5	1	1
10/24/89 11:42	89	V3B	2.2	17.8	2.879	20.0	0.96	0.978
10/24/89 14:06	233	V3B	2.1	18.2	2.901	20.3	0.91	1
10/24/89 19:16	543	V3B	2.4	18.1	2.896	20.5	1.04	0.995
10/25/89 11:14	1501	V3B	2.6	17.5	2.862	20.1	1.13	0.962
10/26/89 10:45	2912	V3B	2.6	17.3	2.851	19.9	1.13	0.951
10/24/89 8:06	0	V3C	2.5	18	2.890	20.5	1	1
10/24/89 11:43	90	V3C	2.2	17.7	2.874	19.9	0.88	0.983
10/24/89 14:08	235	V3C	2.3	18	2.890	20.3	0.9	1
10/24/89 19:18	545	V3C	2.5	18	2.890	20.5	1	1
10/25/89 11:16	1503	V3C	2.7	17.5	2.862	20.2	1.08	0.972
10/26/89 10:47	2914	V3C	2.8	17.1	2.839	19.9	1.1	0.95
10/24/89 8:14	0	V4A	1.1	19.2	2.955	20.3	1	1
10/24/89 11:45	92	V4A	1.0	19	2.944	20.0	0.9	0.99
10/24/89 14:10	237	V4A	1.1	19.2	2.955	20.3	1.05	1
10/24/89 19:20	547	V4A	1.4	19.2	2.955	20.6	1.33	1
10/25/89 11:18	1505	V4A	1.7	18.8	2.934	20.5	1.62	0.979
10/26/89 10:50	2917	V4A	1.7	18.5	2.918	20.2	1.62	0.964

mo/day/yr/time		Elapsed Time (min)	Location	CO2 (%)	O2 (%)	ln O2	CO2+O2 (%)	Norm CO2	Norm O2
10/24/89	8:23	0	V4B	1.2	19.2	2.955	20.4	1	1
10/24/89	11:47	94	V4B	1.1	19	2.944	20.1	0.96	0.99
10/24/89	14:12	239	V4B	1.2	19.2	2.955	20.4	1	1
10/24/89	19:22	549	V4B	1.4	19.3	2.960	20.7	1.17	1.005
10/25/89	11:20	1507	V4B	1.6	18.9	2.939	20.5	1.39	0.984
10/26/89	10:52	2919	V4B	1.6	18.5	2.918	20.1	1.39	0.964
10/24/89	8:28	0	V4C	1.4	19.2	2.955	20.6	1	1
10/24/89	11:50	97	V4C	1.3	18.8	2.934	20.1	0.96	0.979
10/24/89	14:14	241	V4C	1.3	19.2	2.955	20.5	0.93	1
10/24/89	19:25	552	V4C	1.4	19.2	2.955	20.6	1.04	1
10/25/89	11:25	1512	V4C	1.7	18.8	2.934	20.5	1.26	0.979
10/26/89	10:54	2921	V4C	1.7	18.5	2.918	20.2	1.26	0.964

Appendix F

Respiration Test 2 Data

Table 26. Summarized data for Respiration Test 2.

mo/day/yr/time	Elapsed Time (min)	Location	CO2 (%)	O2 (%)	ln O2	CO2+O2 (%)	Norm CO2	Norm O2
11/28/89 15:11	Blowers Off							
11/28/89 11:53	0	V1-1A	4.6	14.4	2.667	19.0	1	1
11/28/89 16:10	59	V1-1A	4.9	13.8	2.625	18.7	1.07	0.96
11/28/89 18:28	197	V1-1A	6.1	12.4	2.518	18.5	1.32	0.86
11/28/89 21:05	354	V1-1A	6.2	11.3	2.425	17.5	1.34	0.78
11/29/89 1:29	618	V1-1A	7.2	9.5	2.251	16.7	1.57	0.66
11/29/89 7:10	959	V1-1A	8.0	7.8	2.054	15.8	1.74	0.54
11/29/89 12:34	1283	V1-1A	8.4	7.0	1.946	15.4	1.83	0.49
11/29/89 19:26	1695	V1-1A	9.4	5.8	1.758	15.2	2.04	0.4
11/30/89 6:58	2387	V1-1A	9.8	4.2	1.435	14.0	2.12	0.29
11/30/89 16:27	2956	V1-1A	11.0	3.4	1.224	14.4	2.4	0.24
12/1/89 8:23	3912	V1-1A	12.8	1.0	0.000	13.8	2.78	0.07
11/28/89 11:57	0	V1-1B	4.8	14.5	2.674	19.3	1	1
11/28/89 16:12	61	V1-1B	4.9	14.0	2.639	18.9	1.01	0.97
11/28/89 18:32	201	V1-1B	5.8	13.4	2.595	19.2	1.2	0.92
11/28/89 21:09	358	V1-1B	5.9	13.0	2.565	18.9	1.22	0.9
11/29/89 1:32	621	V1-1B	6.6	12.0	2.485	18.6	1.38	0.83
11/29/89 7:13	962	V1-1B	7.2	10.8	2.380	18.0	1.51	0.74
11/29/89 12:37	1286	V1-1B	7.4	9.5	2.251	16.9	1.55	0.66
11/29/89 19:30	1699	V1-1B	8.6	8.0	2.079	16.6	1.79	0.55
11/30/89 7:01	2390	V1-1B	9.4	5.5	1.705	14.9	1.95	0.38
11/30/89 16:31	2960	V1-1B	10.9	4.1	1.411	15.0	2.26	0.28
12/1/89 8:27	3916	V1-1B	12.1	1.6	0.470	13.7	2.53	0.11
11/28/89 12:02	0	V1-1C	5.9	13.6	2.610	19.5	1	1
11/28/89 16:14	63	V1-1C	5.9	13.5	2.603	19.4	1	0.99
11/28/89 18:36	205	V1-1C	6.1	13.0	2.565	19.1	1.03	0.96
11/28/89 21:15	364	V1-1C	6.1	13.0	2.565	19.1	1.03	0.96
11/29/89 1:35	624	V1-1C	6.7	12.3	2.510	19.0	1.15	0.9
11/29/89 7:16	965	V1-1C	7.0	11.1	2.407	18.1	1.2	0.82
11/29/89 12:40	1289	V1-1C	7.4	10.0	2.303	17.4	1.27	0.74
11/29/89 19:33	1702	V1-1C	8.4	8.5	2.140	16.9	1.43	0.63
11/30/89 7:04	2393	V1-1C	9.2	6.0	1.792	15.2	1.57	0.44
11/30/89 16:34	2963	V1-1C	11.0	4.5	1.504	15.5	1.88	0.33
12/1/89 8:34	3923	V1-1C	12.1	2.3	0.833	14.4	2.07	0.17
11/28/89 12:08	0	V1-2A	2.3	17.8	2.879	20.1	1	1
11/28/89 16:18	67	V1-2A	3.0	16.2	2.785	19.2	1.28	0.91
11/28/89 18:40	209	V1-2A	4.0	13.6	2.610	17.6	1.74	0.76
11/28/89 21:19	368	V1-2A	4.6	12.0	2.485	16.6	2	0.67
11/29/89 1:40	629	V1-2A	5.9	10.5	2.351	16.4	2.55	0.59
11/29/89 7:20	969	V1-2A	6.8	9.0	2.197	15.8	2.97	0.51
11/29/89 12:43	1292	V1-2A	7.4	7.7	2.041	15.1	3.23	0.43
11/29/89 19:36	1705	V1-2A	8.4	6.7	1.902	15.1	3.65	0.38
11/30/89 7:08	2397	V1-2A	9.2	5.2	1.649	14.4	3.99	0.29
11/30/89 16:37	2966	V1-2A	10.9	3.5	1.253	14.4	4.73	0.2
12/1/89 8:36	3925	V1-2A	12.1	1.8	0.588	13.9	5.28	0.1

mo/day/yr/time	Elapsed Time (min)	Location	CO2 (%)	O2 (%)	ln O2	CO2+O2 (%)	Norm CO2	Norm O2
11/28/89 12:13	0	V1-2B	3.8	15.8	2.760	19.6	1	1
11/28/89 16:21	70	V1-2B	4.1	15.5	2.741	19.6	1.08	0.98
11/28/89 18:43	212	V1-2B	4.6	14.6	2.681	19.2	1.21	0.92
11/28/89 21:22	371	V1-2B	4.8	14.0	2.639	18.8	1.26	0.89
11/29/89 1:43	632	V1-2B	5.8	13.0	2.565	18.8	1.52	0.82
11/29/89 7:25	974	V1-2B	6.4	11.5	2.442	17.9	1.7	0.73
11/29/89 12:45	1294	V1-2B	6.9	10.0	2.303	16.9	1.83	0.63
11/29/89 19:39	1708	V1-2B	8.0	8.4	2.128	16.4	2.11	0.53
11/30/89 7:11	2400	V1-2B	9.0	6.0	1.792	15.0	2.37	0.38
11/30/89 16:42	2971	V1-2B	10.9	4.2	1.435	15.1	2.86	0.27
12/1/89 8:40	3929	V1-2B	12.5	1.8	0.588	14.3	3.28	0.11
11/28/89 12:18	0	V1-2C	7.0	12.4	2.518	19.4	1	1
11/28/89 16:24	73	V1-2C	6.6	13.0	2.565	19.6	0.94	1.05
11/28/89 18:46	215	V1-2C	6.6	12.9	2.557	19.5	0.94	1.04
11/28/89 21:26	375	V1-2C	6.6	12.9	2.557	19.5	0.94	1.04
11/29/89 1:47	636	V1-2C	7.0	12.6	2.534	19.6	1	1.02
11/29/89 7:27	976	V1-2C	7.2	11.5	2.442	18.7	1.03	0.93
11/29/89 12:48	1297	V1-2C	7.6	10.1	2.313	17.7	1.08	0.81
11/29/89 19:42	1711	V1-2C	8.4	9.0	2.197	17.4	1.19	0.73
11/30/89 7:14	2403	V1-2C	9.4	5.8	1.758	15.2	1.33	0.47
11/30/89 16:44	2973	V1-2C	11.2	4.1	1.411	15.3	1.59	0.33
12/1/89 8:42	3931	V1-2C	12.5	1.8	0.588	14.3	1.77	0.15
11/28/89 12:24	0	V1-3A	1.8	18.5	2.918	20.3	1	1
11/28/89 16:28	77	V1-3A	2.5	17.0	2.833	19.5	1.39	0.92
11/28/89 18:49	218	V1-3A	3.2	15.8	2.760	19.0	1.78	0.85
11/28/89 21:30	379	V1-3A	3.7	14.8	2.695	18.5	2.06	0.8
11/29/89 1:51	640	V1-3A	4.0	14.2	2.653	18.2	2.22	0.77
11/29/89 7:31	980	V1-3A	4.1	14.2	2.653	18.3	2.28	0.77
11/29/89 12:52	1301	V1-3A	4.1	13.5	2.603	17.6	2.28	0.73
11/29/89 19:45	1714	V1-3A	4.9	12.0	2.485	16.9	2.69	0.65
11/30/89 7:17	2406	V1-3A	5.7	10.0	2.303	15.7	3.15	0.54
11/30/89 16:47	2976	V1-3A	7.2	7.8	2.054	15.0	4.02	0.42
12/1/89 8:47	3936	V1-3A	8.9	5.0	1.609	13.9	4.94	0.27
11/28/89 12:32	0	V1-3B	3.4	16.4	2.797	16.4	1	1
11/28/89 16:30	79	V1-3B	3.6	16.2	2.785	19.8	1.06	0.99
11/28/89 18:51	220	V1-3B	4.1	15.2	2.721	19.3	1.21	0.93
11/28/89 21:32	381	V1-3B	4.4	14.8	2.695	19.2	1.29	0.9
11/29/89 1:54	643	V1-3B	4.9	13.9	2.632	18.8	1.44	0.85
11/29/89 7:35	984	V1-3B	5.7	12.5	2.526	18.2	1.67	0.76
11/29/89 12:55	1304	V1-3B	7.0	10.4	2.342	17.4	2.07	0.63
11/29/89 19:48	1717	V1-3B	7.8	9.0	2.197	16.8	2.3	0.55
11/30/89 7:22	2411	V1-3B	9.2	6.1	1.808	15.3	2.7	0.37
11/30/89 16:52	2981	V1-3B	10.0	4.6	1.526	14.6	2.93	0.28
12/1/89 8:52	3941	V1-3B	13.1	2.6	0.956	15.7	3.86	0.16

mo/day/yr/time	Elapsed Time (min)	Location	CO2 (%)	O2 (%)	ln O2	CO2+O2 (%)	Norm CO2	Norm O2
11/28/89 12:37	0	V1-3C	4.6	14.6	2.681	19.2	1	1
11/28/89 16:33	82	V1-3C	4.9	14.6	2.681	19.5	1.05	1
11/28/89 18:53	222	V1-3C	5.1	14.0	2.639	19.1	1.11	0.96
11/28/89 21:34	383	V1-3C	5.7	13.7	2.617	19.4	1.23	0.94
11/29/89 1:57	646	V1-3C	6.3	12.9	2.557	19.2	1.38	0.88
11/29/89 7:38	987	V1-3C	7.0	11.1	2.407	18.1	1.53	0.76
11/29/89 12:58	1307	V1-3C	7.8	9.2	2.219	17.0	1.7	0.63
11/29/89 19:52	1721	V1-3C	8.6	7.8	2.054	16.4	1.87	0.53
11/30/89 7:25	2414	V1-3C	9.8	4.9	1.589	14.7	2.12	0.34
11/30/89 16:55	2984	V1-3C	12.5	3.3	1.194	15.8	2.71	0.23
12/1/89 8:55	3944	V1-3C	14.1	1.3	0.262	15.4	3.06	0.09
11/28/89 12:50	0	V2-1A	0.5	19.9	2.991	20.4	1	1
11/28/89 16:36	85	V2-1A	1.2	18.5	2.918	19.7	2.4	0.93
11/28/89 18:55	224	V2-1A	1.8	17.0	2.833	18.8	3.6	0.85
11/28/89 21:38	387	V2-1A	2.3	16.0	2.773	18.3	4.6	0.8
11/29/89 2:00	649	V2-1A	3.1	13.5	2.603	16.6	6.2	0.68
11/29/89 7:41	990	V2-1A	4.3	10.5	2.351	14.8	8.6	0.53
11/29/89 13:03	1312	V2-1A	5.5	8.2	2.104	13.7	10.9	0.41
11/29/89 19:55	1724	V2-1A	6.5	9.5	2.251	16.0	13.1	0.48
11/30/89 7:29	2418	V2-1A	6.4	7.8	2.054	14.2	12.9	0.39
11/30/89 16:59	2988	V2-1A	8.3	6.7	1.902	15.0	16.6	0.34
12/1/89 9:00	3949	V2-1A	8.4	6.2	1.825	14.6	16.8	0.31
11/28/89 12:55	0	V2-1B	3.6	15.2	2.721	18.8	1	1
11/28/89 16:38	87	V2-1B	4.5	14.0	2.639	18.5	1.25	0.92
11/28/89 18:58	227	V2-1B	5.6	12.2	2.501	17.8	1.55	0.8
11/28/89 21:40	389	V2-1B	6.4	11.2	2.416	17.6	1.79	0.74
11/29/89 2:03	652	V2-1B	7.6	9.2	2.219	16.8	2.12	0.61
11/29/89 7:45	994	V2-1B	8.6	7.0	1.946	15.6	2.39	0.46
11/29/89 13:05	1314	V2-1B	9.6	4.2	1.435	13.8	2.66	0.28
11/29/89 19:58	1727	V2-1B	11.7	2.8	1.030	14.5	3.24	0.18
11/30/89 7:35	2424	V2-1B	12.3	1.3	0.262	13.6	3.42	0.09
11/28/89 13:00	0	V2-1C	6.1	12.2	2.501	18.3	1	1
11/28/89 16:40	89	V2-1C	6.4	11.8	2.468	18.2	1.06	0.97
11/28/89 19:03	232	V2-1C	7.0	11.2	2.416	18.2	1.16	0.92
11/28/89 21:43	392	V2-1C	7.6	10.8	2.380	18.4	1.26	0.89
11/29/89 2:06	655	V2-1C	8.2	9.2	2.219	17.4	1.35	0.75
11/29/89 7:48	997	V2-1C	8.8	7.3	1.988	16.1	1.45	0.6
11/29/89 13:10	1319	V2-1C	9.4	4.8	1.569	14.2	1.55	0.39
11/29/89 20:02	1731	V2-1C	11.8	3.2	1.163	15.0	1.95	0.26
11/30/89 7:42	2431	V2-1C	12.5	1.0	0.000	13.5	2.06	0.08

mo/day/yr/time	Elapsed Time (min)	Location	CO2 (%)	O2 (%)	ln O2	CO2+O2 (%)	Norm CO2	Norm O2
11/28/89 13:09	0	V2-2A	0.3	20.5	3.020	20.8	1	1
11/28/89 16:44	93	V2-2A	0.4	19.8	2.986	20.2	1.6	0.97
11/28/89 19:07	236	V2-2A	0.7	18.5	2.918	19.2	2.6	0.9
11/28/89 21:46	395	V2-2A	1.1	17.6	2.868	18.7	4.4	0.86
11/29/89 2:09	658	V2-2A	1.6	16.0	2.773	17.6	6.4	0.78
11/29/89 7:51	1000	V2-2A	2.0	14.3	2.660	16.3	8	0.7
11/29/89 13:13	1322	V2-2A	2.5	12.8	2.549	15.3	10	0.62
11/29/89 20:06	1735	V2-2A	3.1	11.5	2.442	14.6	12.4	0.56
11/30/89 7:47	2436	V2-2A	4.0	9.0	2.197	13.0	15.8	0.44
11/30/89 17:06	2995	V2-2A	5.6	6.8	1.917	12.4	22.3	0.33
12/1/89 9:16	3965	V2-2A	7.4	5.5	1.705	12.9	29.7	0.27
11/28/89 13:18	0	V2-2B	7.6	10.0	2.303	17.6	1	1
11/28/89 16:46	95	V2-2B	7.4	10.5	2.351	17.9	0.97	1.05
11/28/89 19:09	238	V2-2B	7.8	9.8	2.282	17.6	1.03	0.98
11/28/89 21:48	397	V2-2B	8.1	10.0	2.303	18.1	1.06	1
11/29/89 2:10	659	V2-2B	8.6	8.3	2.116	16.9	1.13	0.83
11/29/89 7:54	1003	V2-2B	9.0	6.2	1.825	15.2	1.18	0.62
11/29/89 13:16	1325	V2-2B	9.8	4.8	1.569	14.6	1.28	0.48
11/29/89 20:09	1738	V2-2B	11.8	3.9	1.361	15.7	1.55	0.39
11/30/89 7:50	2439	V2-2B	12.5	1.3	0.262	13.8	1.64	0.13
11/28/89 13:23	0	V2-2C	12.8	3.2	1.163	16.0	1	1
11/28/89 16:52	101	V2-2C	13.7	3.3	1.194	17.0	1.07	1.03
11/28/89 19:13	242	V2-2C	13.4	3.9	1.361	17.3	1.05	1.22
11/28/89 21:52	401	V2-2C	13.7	5.0	1.609	18.7	1.07	1.56
11/29/89 2:15	664	V2-2C	14.6	4.5	1.504	19.1	1.13	1.41
11/29/89 7:57	1006	V2-2C	13.4	3.1	1.131	16.5	1.05	0.97
11/29/89 13:19	1328	V2-2C	13.9	1.5	0.405	15.4	1.08	0.47
11/29/89 20:12	1741	V2-2C	14.1	1.0	0.000	15.1	1.09	0.31
11/30/89 7:53	2442	V2-2C	13.4	0.5	-0.693	13.9		
11/28/89 13:33	0	V2-3A	0.7	19.8	2.986	20.5	1	1
11/28/89 16:55	104	V2-3A	1.4	18.2	2.901	19.6	2	0.92
11/28/89 19:19	248	V2-3A	2.0	16.5	2.803	18.5	2.86	0.83
11/28/89 21:56	405	V2-3A	2.6	15.4	2.734	18.0	3.71	0.78
11/29/89 2:20	669	V2-3A	3.4	13.2	2.580	16.6	4.86	0.67
11/29/89 7:59	1008	V2-3A	4.0	11.5	2.442	15.5	5.71	0.58
11/29/89 13:21	1330	V2-3A	4.6	11.0	2.398	15.6	6.57	0.56
11/29/89 20:15	1744	V2-3A	5.7	9.4	2.241	15.1	8.09	0.47
11/30/89 7:57	2446	V2-3A	7.0	6.0	1.792	13.0	10	0.3
11/30/89 17:08	2997	V2-3A	9.0	5.0	1.609	14.0	12.8	0.25
12/1/89 9:19	3968	V2-3A	9.8	4.5	1.504	14.3	14	0.23

mo/day/yr/time	Elapsed Time (min)	Location	CO2 (%)	O2 (%)	ln O2	CO2+O2 (%)	Norm CO2	Norm O2
11/28/89 13:37	0	V2-3B	5.7	13.0	2.565	18.7		1
11/28/89 16:58	107	V2-3B	6.4	12.5	2.526	18.9	1.14	0.96
11/28/89 19:21	250	V2-3B	7.0	11.1	2.407	18.1	1.24	0.85
11/28/89 21:58	407	V2-3B	7.6	10.6	2.361	18.2	1.34	0.82
11/29/89 2:25	674	V2-3B	8.7	8.2	2.104	16.9	1.53	0.63
11/29/89 8:03	1012	V2-3B	9.3	6.0	1.792	15.3	1.64	0.46
11/29/89 13:24	1333	V2-3B	11.5	3.5	1.253	15.0	2.03	0.27
11/29/89 20:23	1752	V2-3B	12.8	2.3	0.833	15.1	2.26	0.18
11/30/89 8:01	2450	V2-3B	13.1	1.0	0.000	14.1	2.31	0.08
11/28/89 13:42	0	V2-3C	8.6	9.1	2.208	17.7	1	1
11/28/89 17:01	110	V2-3C	9.2	9.2	2.219	18.4	1.07	1.01
11/28/89 19:25	254	V2-3C	9.5	8.4	2.128	17.9	1.1	0.92
11/28/89 22:03	412	V2-3C	9.6	8.2	2.104	17.8	1.11	0.9
11/29/89 2:28	677	V2-3C	10.6	6.2	1.825	16.8	1.24	0.68
11/29/89 8:07	1016	V2-3C	12.1	3.8	1.335	15.9	1.41	0.42
11/29/89 13:26	1335	V2-3C	13.4	1.2	0.182	14.6	1.56	0.13
11/29/89 20:29	1758	V2-3C	14.4	0.5	-0.693	14.9		
11/30/89 8:08	2457	V2-3C	14.1	0.3	-1.204	14.4		
11/28/89 14:07	0	V4A	0.7	19.8	2.986	20.5	1	1
11/29/89 13:41	1350	V4A	0.8	19.8	2.986	20.6	1.14	1
11/30/89 17:14	3003	V4A	0.9	19.8	2.986	20.7	1.29	1
12/1/89 9:25	3974	V4A	0.9	19.8	2.986	20.7	1.29	1
11/28/89 14:10	0	V4B	0.8	19.8	2.986	20.6	1	1
11/29/89 13:43	1352	V4B	0.9	19.7	2.981	20.6	1.06	0.99
11/30/89 17:16	3005	V4B	0.9	19.8	2.986	20.7	1.13	1
12/1/89 9:27	3976	V4B	0.9	19.8	2.986	20.7	1.13	1
11/28/89 14:15	0	V4C	0.9	19.7	2.981	20.6	1	1
11/29/89 13:44	1353	V4C	0.9	19.7	2.981	20.6	1	1
11/30/89 17:17	3006	V4C	1.0	19.7	2.981	20.7	1.11	1
12/1/89 9:29	3978	V4C	1.0	19.7	2.981	20.7	1.11	1

Appendix G

Respiration Test 3 Data

Table 27. Summarized data for Respiration Test 3.

mo/day/yr/time	Elapsed Time (min)	Location	CO2 (%)	O2 (%)	ln O2	CO2+O2 (%)	Norm CO2	Norm O2
1/3/90 15:33	Blowers Off							
1/3/90 11:45	0.0	V1-1A	3.8	16.5	2.803	20.3	1	1
1/3/90 16:20	47.0	V1-1A	3.9	16.5	2.803	20.4	1.03	1
1/3/90 19:16	223.0	V1-1A	4	16.2	2.785	20.2	1.05	0.98
1/3/90 23:12	459.0	V1-1A	4.2	15.8	2.760	20.0	1.11	0.96
1/4/90 5:39	846.0	V1-1A	4.3	15	2.708	19.3	1.13	0.91
1/4/90 12:09	1236.0	V1-1A	4.4	14.1	2.646	18.5	1.16	0.85
1/4/90 17:26	1553.0	V1-1A	4.8	13.3	2.588	18.1	1.26	0.81
1/5/90 6:55	2362.0	V1-1A	5.8	11.2	2.416	17.0	1.53	0.68
1/5/90 16:41	2948.0	V1-1A	6.3	9.6	2.262	15.9	1.66	0.58
1/6/90 7:55	3862.0	V1-1A	7.3	6.8	1.917	14.1	1.92	0.41
1/6/90 16:04	4351.0	V1-1A	7.8	5.4	1.686	13.2	2.05	0.33
1/7/90 8:32	5339.0	V1-1A	8.9	3.3	1.194	12.2	2.34	0.2
1/8/90 10:10	6877.0	V1-1A	10.1	0.8	-0.223	10.9		
1/3/90 11:51	0.0	V1-1B	3.4	17.1	2.839	20.5	1	1
1/3/90 16:22	49.0	V1-1B	3.5	17.1	2.839	20.6	1.03	1
1/3/90 19:18	225.0	V1-1B	3.6	17.1	2.839	20.7	1.06	1
1/3/90 23:13	460.0	V1-1B	3.7	16.8	2.821	20.5	1.09	0.98
1/4/90 5:40	847.0	V1-1B	3.8	16.2	2.785	20.0	1.12	0.95
1/4/90 12:11	1238.0	V1-1B	3.8	15.5	2.741	19.3	1.12	0.91
1/4/90 17:28	1555.0	V1-1B	4.2	15.1	2.715	19.3	1.24	0.88
1/5/90 6:57	2364.0	V1-1B	4.7	13.4	2.595	18.1	1.38	0.78
1/5/90 16:47	2954.0	V1-1B	5.1	12.1	2.493	17.2	1.5	0.71
1/6/90 7:57	3864.0	V1-1B	5.9	9.9	2.293	15.8	1.74	0.58
1/6/90 16:06	4353.0	V1-1B	6.2	8.6	2.152	14.8	1.82	0.5
1/7/90 8:34	5341.0	V1-1B	7.2	6.2	1.825	13.4	2.12	0.36
1/8/90 10:12	6879.0	V1-1B	8.5	3	1.099	11.5	2.5	0.18
1/3/90 11:56	0.0	V1-1C	3.2	17.2	2.845	20.4	1	1
1/3/90 16:24	51.0	V1-1C	3.4	17.4	2.856	20.8	1.06	1.01
1/3/90 19:20	227.0	V1-1C	3.5	17.2	2.845	20.7	1.09	1
1/3/90 23:14	461.0	V1-1C	3.6	17.1	2.839	20.7	1.13	0.99
1/4/90 5:42	849.0	V1-1C	3.8	16.4	2.797	20.2	1.19	0.95
1/4/90 12:13	1240.0	V1-1C	3.8	15.8	2.760	19.6	1.19	0.92
1/4/90 17:30	1557.0	V1-1C	4.1	15.4	2.734	19.5	1.28	0.9
1/5/90 6:59	2366.0	V1-1C	4.5	13.9	2.632	18.4	1.41	0.81
1/5/90 16:52	2959.0	V1-1C	4.9	12.4	2.518	17.3	1.53	0.72
1/6/90 7:58	3865.0	V1-1C	5.7	10.3	2.332	16.0	1.78	0.6
1/6/90 16:08	4355.0	V1-1C	6	9.1	2.208	15.1	1.88	0.53
1/7/90 8:36	5343.0	V1-1C	6.8	6.9	1.932	13.7	2.13	0.4
1/8/90 10:14	6881.0	V1-1C	8.1	3.5	1.253	11.6	2.53	0.2

mo/day/yr/time	Elapsed Time (min)	Location	CO2 (%)	O2 (%)	ln O2	CO2+O2 (%)	Norm CO2	Norm O2
1/3/90 12:01	0.0	V1-2A	2	18.2	2.901	20.2	1	1
1/3/90 16:26	53.0	V1-2A	2.2	18.1	2.896	20.3	1.1	0.99
1/3/90 19:22	229.0	V1-2A	2.7	17.1	2.839	19.8	1.35	0.94
1/3/90 23:16	463.0	V1-2A	3.2	16.2	2.785	19.4	1.6	0.89
1/4/90 5:44	851.0	V1-2A	3.6	15	2.708	18.6	1.8	0.82
1/4/90 12:15	1242.0	V1-2A	3.8	13.9	2.632	17.7	1.9	0.76
1/4/90 17:32	1559.0	V1-2A	4.3	13.2	2.580	17.5	2.15	0.73
1/5/90 7:00	2367.0	V1-2A	5.2	11.1	2.407	16.3	2.6	0.61
1/5/90 16:55	2962.0	V1-2A	6	9.5	2.251	15.5	3	0.52
1/6/90 7:59	3866.0	V1-2A	7.1	7.2	1.974	14.3	3.55	0.4
1/6/90 16:10	4357.0	V1-2A	7.4	6.2	1.825	13.6	3.7	0.34
1/7/90 8:38	5345.0	V1-2A	8.4	4.2	1.435	12.6	4.2	0.23
1/8/90 10:17	6884.0	V1-2A	9.9	1.3	0.262	11.2	4.95	0.07
1/3/90 12:05	0.0	V1-2B	2.75	17.8	2.879	20.6	1	1
1/3/90 16:28	55.0	V1-2B	2.9	17.7	2.874	20.6	1.05	0.99
1/3/90 19:24	231.0	V1-2B	3.1	17.5	2.862	20.6	1.13	0.98
1/3/90 23:18	465.0	V1-2B	3.3	17.1	2.839	20.4	1.2	0.96
1/4/90 5:46	853.0	V1-2B	3.5	16.2	2.785	19.7	1.27	0.91
1/4/90 12:16	1243.0	V1-2B	3.7	15.5	2.741	19.2	1.35	0.87
1/4/90 17:34	1561.0	V1-2B	4	15.1	2.715	19.1	1.45	0.85
1/5/90 7:02	2369.0	V1-2B	4.6	13.2	2.580	17.8	1.67	0.74
1/5/90 16:59	2966.0	V1-2B	5.1	11.9	2.477	17.0	1.85	0.67
1/6/90 8:01	3868.0	V1-2B	6	9.8	2.282	15.8	2.18	0.55
1/6/90 16:12	4359.0	V1-2B	6.3	8.5	2.140	14.8	2.29	0.48
1/7/90 8:40	5347.0	V1-2B	7.3	6.2	1.825	13.5	2.65	0.35
1/8/90 10:19	6886.0	V1-2B	8.9	2.8	1.030	11.7	3.24	0.16
1/3/90 12:13	0.0	V1-2C	3.8	16.5	2.803	20.3	1	1
1/3/90 16:30	57.0	V1-2C	3.9	16.7	2.815	20.6	1.03	1.01
1/3/90 19:26	233.0	V1-2C	3.9	16.7	2.815	20.6	1.03	1.01
1/3/90 23:20	467.0	V1-2C	3.9	16.6	2.809	20.5	1.03	1.01
1/4/90 5:48	855.0	V1-2C	4	16.1	2.779	20.1	1.05	0.98
1/4/90 12:18	1245.0	V1-2C	4	15.3	2.728	19.3	1.05	0.93
1/4/90 17:36	1563.0	V1-2C	4.3	15.1	2.715	19.4	1.13	0.92
1/5/90 7:04	2371.0	V1-2C	4.7	13.5	2.603	18.2	1.24	0.82
1/5/90 17:02	2969.0	V1-2C	5.1	12.1	2.493	17.2	1.34	0.73
1/6/90 8:03	3870.0	V1-2C	6.1	10.1	2.313	16.2	1.61	0.61
1/6/90 16:14	4361.0	V1-2C	6.3	8.9	2.186	15.2	1.66	0.54
1/7/90 8:42	5349.0	V1-2C	7.2	6.4	1.856	13.6	1.89	0.39
1/8/90 10:21	6888.0	V1-2C	8.7	2.9	1.065	11.6	2.29	0.18

mo/day/yr/time	Elapsed Time (min)	Location	CO2 (%)	O2 (%)	ln O2	CO2+O2 (%)	Norm CO2	Norm O2
1/3/90 12:18	0.0	V1-3A	0.6	20.2	3.006	20.8	1	1
1/3/90 16:32	59.0	V1-3A	1	19.1	2.950	20.1	1.67	0.95
1/3/90 19:28	235.0	V1-3A	1.6	18.2	2.901	19.8	2.67	0.9
1/3/90 23:22	469.0	V1-3A	2.2	17.2	2.845	19.4	3.67	0.85
1/4/90 5:49	856.0	V1-3A	2.7	16.2	2.785	18.9	4.5	0.8
1/4/90 12:20	1247.0	V1-3A	3	15.2	2.721	18.2	5	0.75
1/4/90 17:38	1565.0	V1-3A	3.6	14.8	2.695	18.4	6	0.73
1/5/90 7:06	2373.0	V1-3A	4.3	12.7	2.542	17.0	7.17	0.63
1/5/90 17:04	2971.0	V1-3A	5	11.2	2.416	16.2	8.33	0.55
1/6/90 8:07	3874.0	V1-3A	6.1	9.1	2.208	15.2	10.2	0.45
1/6/90 16:16	4363.0	V1-3A	6.4	8.4	2.128	14.8	10.7	0.42
1/7/90 8:44	5351.0	V1-3A	7.2	6.5	1.872	13.7	12	0.32
1/8/90 10:23	6890.0	V1-3A	8.7	3.6	1.281	12.3	14.5	0.18
1/3/90 12:22	0.0	V1-3B	2.5	18.1	2.896	20.6	1	1
1/3/90 16:34	61.0	V1-3B	2.6	18	2.890	20.6	1.04	0.99
1/3/90 19:30	237.0	V1-3B	2.8	17.7	2.874	20.5	1.12	0.98
1/3/90 23:24	471.0	V1-3B	3	17.2	2.845	20.2	1.2	0.95
1/4/90 5:51	858.0	V1-3B	3.3	16.3	2.791	19.6	1.32	0.9
1/4/90 12:22	1249.0	V1-3B	3.5	15.5	2.741	19.0	1.4	0.86
1/4/90 17:40	1567.0	V1-3B	3.9	15.1	2.715	19.0	1.56	0.83
1/5/90 7:08	2375.0	V1-3B	4.5	13.3	2.588	17.8	1.8	0.73
1/5/90 17:05	2972.0	V1-3B	5.1	12.1	2.493	17.2	2.04	0.67
1/6/90 8:09	3876.0	V1-3B	6.1	10.4	2.342	16.5	2.44	0.57
1/6/90 16:18	4365.0	V1-3B	6.3	9.4	2.241	15.7	2.52	0.52
1/7/90 8:46	5353.0	V1-3B	7.1	7.5	2.015	14.6	2.84	0.41
1/8/90 10:25	6892.0	V1-3B	8.3	4.5	1.504	12.8	3.32	0.25
1/3/90 12:26	0.0	V1-3C	3.2	17.2	2.845	20.4	1	1
1/3/90 16:36	63.0	V1-3C	3.3	17.1	2.839	20.4	1.03	0.99
1/3/90 19:32	239.0	V1-3C	3.5	17	2.833	20.5	1.09	0.99
1/3/90 23:26	473.0	V1-3C	3.6	16.8	2.821	20.4	1.13	0.98
1/4/90 5:52	859.0	V1-3C	3.8	16	2.773	19.8	1.19	0.93
1/4/90 12:24	1251.0	V1-3C	3.9	15.2	2.721	19.1	1.22	0.88
1/4/90 17:42	1569.0	V1-3C	4.3	14.8	2.695	19.1	1.34	0.86
1/5/90 7:10	2377.0	V1-3C	4.8	13.1	2.573	17.9	1.5	0.76
1/5/90 17:07	2974.0	V1-3C	5.4	11.9	2.477	17.3	1.69	0.69
1/6/90 8:11	3878.0	V1-3C	6.2	10.1	2.313	16.3	1.94	0.59
1/6/90 16:20	4367.0	V1-3C	6.5	9.1	2.208	15.6	2.03	0.53
1/7/90 8:48	5355.0	V1-3C	7.3	7.2	1.974	14.5	2.28	0.42
1/8/90 10:27	6894.0	V1-3C	8.7	4.1	1.411	12.8	2.72	0.24

mo/day/yr/time		Elapsed Time (min)	Location	CO2 (%)	O2 (%)	ln O2	CO2+O2 (%)	Norm CO2	Norm O2
1/3/90	12:37	0.0	V2-1A	0.1	20.8	3.035	20.9	1	1
1/3/90	16:37	64.0	V2-1A	0.15	20.6	3.025	20.8	1.5	0.99
1/3/90	19:34	241.0	V2-1A	0.3	20.4	3.016	20.7	3	0.98
1/3/90	23:27	474.0	V2-1A	0.3	19.8	2.986	20.1	3	0.95
1/4/90	5:55	862.0	V2-1A	0.6	18.8	2.934	19.4	6	0.9
1/4/90	12:26	1253.0	V2-1A	0.6	17.9	2.885	18.5	6	0.86
1/4/90	17:44	1571.0	V2-1A	1.2	17.1	2.839	18.3	12	0.82
1/5/90	7:11	2378.0	V2-1A	2.3	14.2	2.653	16.5	23	0.68
1/5/90	17:09	2976.0	V2-1A	1.7	18.5	2.918	20.2	17	0.89
1/6/90	8:13	3880.0	V2-1A	0.2	20.7	3.030	20.9	2	1
1/6/90	16:22	4369.0	V2-1A	0.2	20.8	3.035	21.0	2	1
1/7/90	8:50	5357.0	V2-1A	0.2	20.7	3.030	20.9	2	1
1/8/90	10:29	6896.0	V2-1A	0.4	20.2	3.006	20.6	4	0.97
1/3/90	12:43	0.0	V2-1B	1.25	19.3	2.960	20.6	1	1
1/3/90	16:39	66.0	V2-1B	1.5	18.5	2.918	20.0	1.2	0.96
1/3/90	19:35	242.0	V2-1B	2.1	17.7	2.874	19.8	1.68	0.92
1/3/90	23:28	475.0	V2-1B	2.7	16.3	2.791	19.0	2.16	0.84
1/4/90	5:57	864.0	V2-1B	3.6	14	2.639	17.6	2.88	0.73
1/4/90	12:28	1255.0	V2-1B	4.2	11.9	2.477	16.1	3.36	0.62
1/4/90	17:45	1572.0	V2-1B	5	10.8	2.380	15.8	4	0.56
1/5/90	7:13	2380.0	V2-1B	6.4	7.5	2.015	13.9	5.12	0.39
1/5/90	17:16	2983.0	V2-1B	7.5	5.8	1.758	13.3	6	0.3
1/6/90	8:15	3882.0	V2-1B	8.5	6.1	1.808	14.6	6.8	0.32
1/6/90	16:24	4371.0	V2-1B	8.5	7.5	2.015	16.0	6.8	0.39
1/7/90	8:52	5359.0	V2-1B	8	9.6	2.262	17.6	6.4	0.5
1/8/90	10:31	6898.0	V2-1B	8.1	8.4	2.128	16.5	6.48	0.44
1/3/90	12:47	0.0	V2-1C	1.3	19.2	2.955	20.5	1	1
1/3/90	16:40	67.0	V2-1C	1.8	18.9	2.939	20.7	1.38	0.98
1/3/90	19:36	243.0	V2-1C	2.2	18.5	2.918	20.7	1.69	0.96
1/3/90	23:30	477.0	V2-1C	2.3	17.8	2.879	20.1	1.77	0.93
1/4/90	5:59	866.0	V2-1C	2.9	16.3	2.791	19.2	2.23	0.85
1/4/90	12:30	1257.0	V2-1C	3.2	14.8	2.695	18.0	2.46	0.77
1/4/90	17:46	1573.0	V2-1C	4	13.9	2.632	17.9	3.08	0.72
1/5/90	7:15	2382.0	V2-1C	4.8	11.2	2.416	16.0	3.69	0.58
1/5/90	17:18	2985.0	V2-1C	6	8.9	2.186	14.9	4.62	0.46
1/7/90	8:54	5361.0	V2-1C	7	14.5	2.674	21.5	5.38	0.76

mo/day/yr/time	Elapsed Time (min)	Location	CO2 (%)	O2 (%)	ln O2	CO2+O2 (%)	Norm CO2	Norm O2
1/3/90 12:56	0.0	V2-2A	0.05	20.9	3.040	21.0	1	1
1/3/90 16:42	69.0	V2-2A	0.1	20.8	3.035	20.9	2	1
1/3/90 19:38	245.0	V2-2A	0.15	20.5	3.020	20.7	3	0.98
1/3/90 23:32	479.0	V2-2A	0.15	20.2	3.006	20.4	3	0.97
1/4/90 6:00	867.0	V2-2A	0.2	19.1	2.950	19.3	4	0.91
1/4/90 12:32	1259.0	V2-2A	0.3	18.1	2.896	18.4	6	0.87
1/4/90 17:47	1574.0	V2-2A	0.75	17.3	2.851	18.1	15	0.83
1/5/90 7:17	2384.0	V2-2A	1.4	14.8	2.695	16.2	28	0.71
1/5/90 17:20	2987.0	V2-2A	1.8	15.5	2.741	17.3	36	0.74
1/6/90 8:19	3886.0	V2-2A	3.4	12.2	2.501	15.6	68	0.58
1/6/90 16:28	4375.0	V2-2A	3.3	13.1	2.573	16.4	66	0.63
1/7/90 8:56	5363.0	V2-2A	7.1	11.3	2.425	18.4	142	0.54
1/8/90 10:34	6901.0	V2-2A	3.4	18	2.890	21.4	68	0.86
1/3/90 13:06	0.0	V2-2B	1	19.7	2.981	20.7	1	1
1/3/90 16:43	70.0	V2-2B	1.1	19.5	2.970	20.6	1.1	0.99
1/3/90 19:40	247.0	V2-2B	1.3	19.1	2.950	20.4	1.3	0.97
1/3/90 23:34	481.0	V2-2B	1.7	18.2	2.901	19.9	1.7	0.92
1/4/90 6:02	869.0	V2-2B	2.2	16.9	2.827	19.1	2.2	0.86
1/4/90 12:34	1261.0	V2-2B	2.7	15.2	2.721	17.9	2.7	0.77
1/4/90 17:48	1575.0	V2-2B	3.3	14.4	2.667	17.7	3.3	0.73
1/5/90 7:18	2385.0	V2-2B	4.3	11.2	2.416	15.5	4.3	0.57
1/5/90 17:24	2991.0	V2-2B	5.2	9.2	2.219	14.4	5.2	0.47
1/6/90 8:21	3888.0	V2-2B	7.9	5.4	1.686	13.3	7.9	0.27
1/6/90 16:30	4377.0	V2-2B	9	5.2	1.649	14.2	9	0.26
1/7/90 8:58	5365.0	V2-2B	10.1	5.9	1.775	16.0	10.1	0.3
1/8/90 10:36	6903.0	V2-2B	10.9	5.9	1.775	16.8	10.9	0.3
1/3/90 13:09	0.0	V2-2C	1.7	19	2.944	20.7	1	1
1/3/90 16:44	71.0	V2-2C	2.1	18.6	2.923	20.7	1.24	0.98
1/3/90 19:42	249.0	V2-2C	2.5	18.4	2.912	20.9	1.47	0.97
1/3/90 23:35	482.0	V2-2C	2.6	17.8	2.879	20.4	1.53	0.94
1/4/90 6:04	871.0	V2-2C	3	16.3	2.791	19.3	1.76	0.86
1/4/90 12:36	1263.0	V2-2C	3.3	14.7	2.688	18.0	1.94	0.77
1/4/90 17:50	1577.0	V2-2C	3.9	13.9	2.632	17.8	2.29	0.73
1/5/90 7:20	2387.0	V2-2C	4.8	10.7	2.370	15.5	2.82	0.56
1/5/90 17:26	2993.0	V2-2C	5.7	8.5	2.140	14.2	3.35	0.45
1/6/90 8:24	3891.0	V2-2C	7.9	5.1	1.629	13.0	4.65	0.27
1/6/90 16:32	4379.0	V2-2C	9.1	4.8	1.569	13.9	5.35	0.25
1/7/90 9:00	5367.0	V2-2C	10.5	5.1	1.629	15.6	6.18	0.27
1/8/90 10:38	6905.0	V2-2C	11.8	4.4	1.482	16.2	6.94	0.23

mo/day/yr/time	Elapsed Time (min)	Location	CO2 (%)	O2 (%)	ln O2	CO2+O2 (%)	Norm CO2	Norm O2
1/3/90 13:12	0.0	V2-3A	0.1	20.7	3.030	20.8	1	1
1/3/90 16:47	74.0	V2-3A	0.15	20.5	3.020	20.7	1.5	0.99
1/3/90 19:44	251.0	V2-3A	0.3	20.2	3.006	20.5	3	0.98
1/3/90 23:37	484.0	V2-3A	0.5	19.2	2.955	19.7	5	0.93
1/4/90 6:05	872.0	V2-3A	0.8	18	2.890	18.8	8	0.87
1/4/90 12:38	1265.0	V2-3A	1.2	16.3	2.791	17.5	12	0.79
1/4/90 17:52	1579.0	V2-3A	2	15.9	2.766	17.9	20	0.77
1/5/90 7:24	2391.0	V2-3A	3.2	13.1	2.573	16.3	32	0.63
1/5/90 17:27	2994.0	V2-3A	3.2	14.4	2.667	17.6	32	0.7
1/6/90 8:26	3893.0	V2-3A	0.8	20	2.996	20.8	8	0.97
1/6/90 16:34	4381.0	V2-3A	0.7	19.9	2.991	20.6	7	0.96
1/7/90 9:02	5369.0	V2-3A	0.6	20.1	3.001	20.7	6	0.97
1/8/90 10:40	6907.0	V2-3A	0.7	19.4	2.965	20.1	7	0.94
1/3/90 13:15	0.0	V2-3B	0.9	19.5	2.970	20.4	1	1
1/3/90 16:48	75.0	V2-3B	1.1	19.4	2.965	20.5	1.22	0.99
1/3/90 19:46	253.0	V2-3B	1.4	19	2.944	20.4	1.56	0.97
1/3/90 23:39	486.0	V2-3B	1.8	18.1	2.896	19.9	2	0.93
1/4/90 6:07	874.0	V2-3B	2.6	16.7	2.815	19.3	2.89	0.86
1/4/90 12:40	1267.0	V2-3B	3.1	15.1	2.715	18.2	3.44	0.77
1/4/90 17:53	1580.0	V2-3B	3.6	14.5	2.674	18.1	4	0.74
1/5/90 7:26	2393.0	V2-3B	4.7	11.9	2.477	16.6	5.22	0.61
1/5/90 17:30	2997.0	V2-3B	5.3	10.4	2.342	15.7	5.89	0.53
1/6/90 8:28	3895.0	V2-3B	5.8	11.3	2.425	17.1	6.44	0.58
1/6/90 16:36	4383.0	V2-3B	6.1	11.8	2.468	17.9	6.78	0.61
1/7/90 9:04	5371.0	V2-3B	6.5	12	2.485	18.5	7.22	0.62
1/8/90 10:42	6909.0	V2-3B	7.2	10.7	2.370	17.9	8	0.55
1/3/90 13:18	0.0	V2-3C	2.2	18.5	2.918	20.7	1	1
1/3/90 16:49	76.0	V2-3C	2.4	18.2	2.901	20.6	1.09	0.98
1/3/90 19:48	255.0	V2-3C	2.9	17.6	2.868	20.5	1.32	0.95
1/3/90 23:40	487.0	V2-3C	3.2	16.8	2.821	20.0	1.45	0.91
1/4/90 6:09	876.0	V2-3C	3.8	15.3	2.728	19.1	1.73	0.83
1/4/90 12:42	1269.0	V2-3C	4	14	2.639	18.0	1.82	0.76
1/4/90 17:55	1582.0	V2-3C	4.7	13	2.565	17.7	2.14	0.7
1/5/90 7:28	2395.0	V2-3C	5.9	10.3	2.332	16.2	2.68	0.56
1/5/90 17:32	2999.0	V2-3C	6.7	8.5	2.140	15.2	3.05	0.46
1/6/90 8:30	3897.0	V2-3C	7.2	8.5	2.140	15.7	3.27	0.46
1/6/90 16:37	4384.0	V2-3C	7.5	8.8	2.175	16.3	3.41	0.48
1/7/90 9:06	5373.0	V2-3C	8.3	9.1	2.208	17.4	3.77	0.49
1/8/90 10:44	6911.0	V2-3C	9.8	7	1.946	16.8	4.45	0.38

mo/day/yr/time	Elapsed Time (min)	Location	CO2 (%)	O2 (%)	ln O2	CO2+O2 (%)	Norm CO2	Norm O2
1/3/90 14:03	0.0	V3A	3	17.7	2.874	20.7	1	1
1/3/90 16:58	85.0	V3A	3.1	17.5	2.862	20.6	1.03	0.99
1/3/90 19:51	258.0	V3A	3.2	17.6	2.868	20.8	1.07	0.99
1/3/90 23:44	491.0	V3A	3.1	17.2	2.845	20.3	1.03	0.97
1/4/90 6:13	880.0	V3A	3.2	17	2.833	20.2	1.07	0.96
1/4/90 12:48	1275.0	V3A	3.2	16.8	2.821	20.0	1.07	0.95
1/4/90 18:00	1587.0	V3A	3.5	16.6	2.809	20.1	1.17	0.94
1/5/90 7:32	2399.0	V3A	3.6	16.1	2.779	19.7	1.2	0.91
1/5/90 17:34	3001.0	V3A	3.8	15.8	2.760	19.6	1.27	0.89
1/6/90 8:34	3901.0	V3A	3.9	15.4	2.734	19.3	1.3	0.87
1/6/90 16:39	4386.0	V3A	4	15.2	2.721	19.2	1.33	0.86
1/7/90 9:09	5376.0	V3A	4	14.9	2.701	18.9	1.33	0.84
1/8/90 10:49	6916.0	V3A	4.1	14.8	2.695	18.9	1.37	0.84
1/3/90 14:05	0.0	V3B	3.2	17.3	2.851	20.5	1	1
1/3/90 16:59	86.0	V3B	3.3	17.2	2.845	20.5	1.03	0.99
1/3/90 19:53	260.0	V3B	3.3	17.3	2.851	20.6	1.03	1
1/3/90 23:45	492.0	V3B	3.2	17	2.833	20.2	1	0.98
1/4/90 6:15	882.0	V3B	3.3	16.8	2.821	20.1	1.03	0.97
1/4/90 12:49	1276.0	V3B	3.2	16.6	2.809	19.8	1	0.96
1/4/90 18:01	1588.0	V3B	3.6	16.5	2.803	20.1	1.13	0.95
1/5/90 7:33	2400.0	V3B	3.7	16.1	2.779	19.8	1.16	0.93
1/5/90 17:35	3002.0	V3B	3.9	15.8	2.760	19.7	1.22	0.91
1/6/90 8:36	3903.0	V3B	4	15.2	2.721	19.2	1.25	0.88
1/6/90 16:40	4387.0	V3B	4.1	15.1	2.715	19.2	1.28	0.87
1/7/90 9:11	5378.0	V3B	4.1	14.7	2.688	18.8	1.28	0.85
1/8/90 10:50	6917.0	V3B	4.25	14.2	2.653	18.5	1.33	0.82
1/3/90 14:07	0.0	V3C	3.2	17.2	2.845	20.4	1	1
1/3/90 17:00	87.0	V3C	3.3	17.2	2.845	20.5	1.03	1
1/3/90 19:55	262.0	V3C	3.3	17.3	2.851	20.6	1.03	1.01
1/3/90 23:47	494.0	V3C	3.2	17.1	2.839	20.3	1	0.99
1/4/90 6:16	883.0	V3C	3.3	16.8	2.821	20.1	1.03	0.98
1/4/90 12:50	1277.0	V3C	3.2	16.7	2.815	19.9	1	0.97
1/4/90 18:02	1589.0	V3C	3.5	16.5	2.803	20.0	1.09	0.96
1/5/90 7:35	2402.0	V3C	3.7	16	2.773	19.7	1.16	0.93
1/5/90 17:36	3003.0	V3C	3.9	15.7	2.754	19.6	1.22	0.91
1/6/90 8:38	3905.0	V3C	4	15.3	2.728	19.3	1.25	0.89
1/6/90 16:42	4389.0	V3C	4	15.1	2.715	19.1	1.25	0.88
1/7/90 9:13	5380.0	V3C	4.1	14.7	2.688	18.8	1.28	0.85
1/8/90 10:52	6919.0	V3C	4.2	14.3	2.660	18.5	1.31	0.83

mo/day/yr/time	Elapsed Time (min)	Location	CO2 (%)	O2 (%)	ln O2	CO2+O2 (%)	Norm CO2	Norm O2
1/3/90 13:49	0.0	V4A	0.2	20.6	3.025	20.8	1	1
1/3/90 17:01	88.0	V4A	0.3	20.5	3.020	20.8	1.5	1
1/4/90 12:53	1280.0	V4A	0.4	20.2	3.006	20.6	2	0.98
1/5/90 7:36	2403.0	V4A	0.6	20.1	3.001	20.7	3	0.98
1/6/90 8:39	3906.0	V4A	0.9	19.8	2.986	20.7	4.5	0.96
1/6/90 16:44	4391.0	V4A	1	19.7	2.981	20.7	5	0.96
1/7/90 9:15	5382.0	V4A	1	19.3	2.960	20.3	5	0.94
1/8/90 10:53	6920.0	V4A	1.2	19.2	2.955	20.4	6	0.93
1/3/90 13:51	0.0	V4B	0.2	20.6	3.025	20.8	1	1
1/3/90 17:02	89.0	V4B	0.3	20.5	3.020	20.8	1.5	1
1/4/90 12:54	1281.0	V4B	0.3	20.3	3.011	20.6	1.5	0.99
1/5/90 7:37	2404.0	V4B	0.6	20.1	3.001	20.7	3	0.98
1/6/90 8:40	3907.0	V4B	1	19.8	2.986	20.8	5	0.96
1/6/90 16:46	4393.0	V4B	0.9	19.7	2.981	20.6	4.5	0.96
1/7/90 9:17	5384.0	V4B	1	19.3	2.960	20.3	5	0.94
1/8/90 10:55	6922.0	V4B	1.1	19.2	2.955	20.3	5.5	0.93
1/3/90 13:53	0.0	V4C	0.3	20.5	3.020	20.8	1	1
1/3/90 17:03	90.0	V4C	0.3	20.5	3.020	20.8	1	1
1/4/90 12:56	1283.0	V4C	0.3	20.3	3.011	20.6	1	0.99
1/5/90 7:39	2406.0	V4C	0.6	20.1	3.001	20.7	2	0.98
1/6/90 8:41	3908.0	V4C	1	19.8	2.986	20.8	3.33	0.97
1/6/90 16:47	4394.0	V4C	1	19.7	2.981	20.7	3.33	0.96
1/7/90 9:19	5386.0	V4C	0.9	19.4	2.965	20.3	3	0.95
1/8/90 10:57	6924.0	V4C	1.2	19.2	2.955	20.4	4	0.94

Appendix H

Respiration Test 4 Data

Table 28. Summarized data for Respiration Test 4.

mo/day/yr/time	Elapsed Time (min)	Location	CO2 (%)	O2 (%)	ln O2	CO2+O2 (%)	THC µL/L	Norm CO2	Norm O2
3/3/90 11:06	Blower to V3 and V4 off for shutdown test 4								
3/3/90 10:00	0	V3A	5.4	14.7	2.688	20.1		1	1
3/3/90 13:24	138	V3A	5.2	14.9	2.701	20.1		0.96	1.01
3/3/90 16:38	332	V3A	5.3	15	2.708	20.25		0.97	1.02
3/4/90 9:46	1360	V3A	5.1	14.4	2.667	19.5		0.94	0.98
3/4/90 17:23	1817	V3A	5.2	14.4	2.667	19.6		0.96	0.98
3/5/90 8:13	2707	V3A	5.0	14.3	2.660	19.3		0.93	0.97
3/5/90 16:48	3222	V3A	5.1	14.2	2.653	19.3		0.94	0.97
3/6/90 10:17	4271	V3A	5.0	14.1	2.646	19.1		0.93	0.96
3/3/90 10:02	0	V3B	5.8	14.2	2.653	20		1	1
3/3/90 13:26	140	V3B	5.7	14.3	2.660	20		0.98	1.01
3/3/90 16:40	334	V3B	5.7	14.5	2.674	20.2		0.98	1.02
3/4/90 9:48	1362	V3B	5.3	14.1	2.646	19.4		0.91	0.99
3/4/90 17:25	1819	V3B	5.4	14.1	2.646	19.5		0.93	0.99
3/5/90 8:16	2710	V3B	5.1	14.1	2.646	19.2		0.88	0.99
3/5/90 16:50	3224	V3B	5.1	14.1	2.646	19.2		0.88	0.99
3/6/90 10:19	4273	V3B	5.1	13.9	2.632	19		0.88	0.98
3/3/90 10:04	0	V3C	6.0	14.1	2.646	20.1		1	1
3/3/90 13:28	142	V3C	5.8	14.2	2.653	20		0.97	1.01
3/3/90 16:42	336	V3C	5.7	14.5	2.674	20.2		0.95	1.03
3/4/90 9:50	1364	V3C	5.4	14	2.639	19.4		0.9	0.99
3/4/90 17:27	1821	V3C	5.4	14.1	2.646	19.5		0.9	1
3/5/90 8:18	2712	V3C	5.2	14	2.639	19.2		0.87	0.99
3/5/90 16:52	3226	V3C	5.2	14.1	2.646	19.3		0.87	1
3/6/90 10:21	4275	V3C	6.4	12	2.485	18.4		1.07	0.85
3/3/90 9:52	0	V4A	0.5	20.5	3.020	21		1	1
3/3/90 13:30	144	V4A	0.6	20.4	3.016	21		1.2	1
3/3/90 16:44	338	V4A	0.6	20.5	3.020	21.1		1.2	1
3/4/90 9:53	1367	V4A	0.8	20	2.996	20.8		1.6	0.98
3/4/90 17:29	1823	V4A	0.9	20	2.996	20.9		1.8	0.98
3/5/90 8:23	2717	V4A	1.0	19.5	2.970	20.5		2	0.95
3/5/90 16:54	3228	V4A	1.1	19.5	2.970	20.6		2.2	0.95
3/6/90 10:24	4278	V4A	1.2	19.2	2.955	20.4		2.4	0.94
3/3/90 9:54	0	V4B	0.6	20.3	3.011	20.9		1	1
3/3/90 13:32	146	V4B	0.7	20.3	3.011	21		1.17	1
3/3/90 16:46	340	V4B	0.7	20.3	3.011	21		1.17	1
3/4/90 9:55	1369	V4B	0.8	20	2.996	20.8		1.33	0.99
3/4/90 17:31	1825	V4B	0.9	20	2.996	20.9		1.5	0.99
3/5/90 8:25	2719	V4B	1.0	19.5	2.970	20.5		1.67	0.96
3/5/90 16:56	3230	V4B	1.1	19.5	2.970	20.6		1.83	0.96
3/6/90 10:26	4280	V4B	1.2	19.2	2.955	20.4		2	0.95
3/3/90 9:56	0	V4C	0.7	20.2	3.006	20.9		1	1
3/3/90 13:34	148	V4C	0.7	20.2	3.006	20.9		1	1
3/3/90 16:48	342	V4C	0.8	20.3	3.011	21.05		1.07	1
3/4/90 9:57	1371	V4C	0.8	20	2.996	20.8		1.14	0.99
3/4/90 17:33	1827	V4C	0.9	20	2.996	20.9		1.29	0.99
3/5/90 8:27	2721	V4C	1.0	19.5	2.970	20.5		1.43	0.97
3/5/90 16:58	3232	V4C	1.1	19.4	2.965	20.5		1.57	0.96
3/6/90 10:28	4282	V4C	1.2	19.2	2.955	20.4		1.71	0.95

mo/day/yr/time	Elapsed Time (min)	Location	CO2 (%)	O2 (%)	ln O2	CO2+O2 (%)	THC µL/L	Norm CO2	Norm O2
3/8/90 11:35	Blowers off (V1 & V2) for shutdown 4								
3/8/90 9:46	0	V1-1A	5.8	13.5	2.603	19.3	2494	1	1
3/8/90 13:42	127	V1-1A	6.0	12.9	2.557	18.9		1.03	0.96
3/8/90 17:08	333	V1-1A	6.7	11	2.398	17.7		1.16	0.81
3/8/90 22:16	641	V1-1A	7.4	9	2.197	16.4		1.28	0.67
3/9/90 7:44	1209	V1-1A	8.2	6.2	1.825	14.4		1.41	0.46
3/9/90 16:01	1706	V1-1A	9.2	4.1	1.411	13.3		1.59	0.3
3/10/90 6:42	2587	V1-1A	11.0	0.8	-0.223	11.8			
3/8/90 9:59	0	V1-1B	6.5	11.3	2.468	18.3	3719	1	1
3/8/90 13:44	129	V1-1B	6.8	11.6	2.451	18.4		1.05	0.98
3/8/90 17:13	338	V1-1B	7.2	11	2.398	18.2		1.11	0.93
3/8/90 22:18	643	V1-1B	7.6	10.2	2.322	17.8		1.17	0.86
3/9/90 7:46	1211	V1-1B	7.8	8.5	2.140	16.3		1.2	0.72
3/9/90 16:04	1709	V1-1B	8.3	6.8	1.917	15.1		1.28	0.58
3/10/90 6:44	2589	V1-1B	9.8	3.7	1.308	13.5		1.51	0.31
3/10/90 17:30	3235	V1-1B	10.4	1.9	0.642	12.3		1.6	0.16
3/8/90 10:07	0	V1-1C	7.1	11	2.398	18.1	2331	1	1
3/8/90 13:46	131	V1-1C	7.4	10.7	2.370	18.1		1.04	0.97
3/8/90 17:15	340	V1-1C	7.7	10.2	2.322	17.9		1.08	0.93
3/8/90 22:20	645	V1-1C	8.0	10	2.303	18		1.13	0.91
3/9/90 7:48	1213	V1-1C	8.2	8.5	2.140	16.7		1.15	0.77
3/9/90 16:07	1712	V1-1C	8.6	7.1	1.960	15.7		1.21	0.65
3/10/90 6:46	2591	V1-1C	9.8	4.1	1.411	13.9		1.38	0.37
3/10/90 17:32	3237	V1-1C	10.4	2.2	0.788	12.6		1.46	0.2
3/8/90 10:20	0	V1-2A	3.4	16.8	2.821	20.2	908	1	1
3/8/90 13:48	133	V1-2A	4.0	15.3	2.728	19.3		1.18	0.91
3/8/90 17:17	342	V1-2A	4.7	13.2	2.580	17.9		1.38	0.79
3/8/90 22:24	649	V1-2A	5.6	11.2	2.416	16.8		1.65	0.67
3/9/90 7:50	1215	V1-2A	6.6	8.2	2.104	14.8		1.94	0.49
3/9/90 16:10	1715	V1-2A	7.4	6.2	1.825	13.6		2.18	0.37
3/10/90 6:48	2593	V1-2A	9.4	2.3	0.833	11.7		2.76	0.14
3/10/90 17:34	3239	V1-2A	10.5	0.6	-0.511	11.1			
3/8/90 10:27	0	V1-2B	4.5	15	2.708	19.5	1513	1	1
3/8/90 13:50	135	V1-2B	4.8	14.4	2.667	19.2		1.07	0.96
3/8/90 17:19	344	V1-2B	5.4	13.6	2.610	19		1.2	0.91
3/8/90 22:26	651	V1-2B	6.0	12.4	2.518	18.4		1.33	0.83
3/9/90 7:52	1217	V1-2B	6.6	10.2	2.322	16.8		1.47	0.68
3/9/90 16:12	1717	V1-2B	7.3	8.2	2.104	15.5		1.62	0.55
3/10/90 6:50	2595	V1-2B	8.8	4.6	1.526	13.4		1.96	0.31
3/10/90 17:36	3241	V1-2B	9.7	2.4	0.875	12.1		2.16	0.16
3/8/90 10:32	0	V1-2C	4.8	14.7	2.688	19.5	1758	1	1
3/8/90 13:52	137	V1-2C	5.8	13.2	2.580	19		1.21	0.9
3/8/90 17:21	346	V1-2C	6.3	12.7	2.542	19		1.31	0.86
3/8/90 22:28	653	V1-2C	6.6	12.2	2.501	18.8		1.38	0.83
3/9/90 7:54	1219	V1-2C	6.9	10.3	2.332	17.2		1.44	0.7
3/9/90 16:14	1719	V1-2C	7.4	8.6	2.152	16		1.54	0.59
3/10/90 6:52	2597	V1-2C	8.8	5.2	1.649	14		1.83	0.35
3/10/90 17:38	3243	V1-2C	9.5	3	1.099	12.5		1.98	0.2

mo/day/yr/time	Elapsed Time (min)	Location	CO2 (%)	O2 (%)	ln O2	CO2+O2 (%)	THC µL/L	Norm CO2	Norm O2
3/8/90 10:37	0	V1-3A	1.8	18.3	2.907	20.1	200	1	1
3/8/90 13:54	139	V1-3A	3.0	16.1	2.779	19.1		1.67	0.88
3/8/90 17:23	348	V1-3A	4.0	14.2	2.653	18.2		2.22	0.78
3/8/90 22:30	655	V1-3A	5.0	12.4	2.518	17.4		2.78	0.68
3/9/90 7:58	1223	V1-3A	6.1	9.9	2.293	16		3.39	0.54
3/9/90 16:16	1721	V1-3A	7.0	7.8	2.054	14.8		3.89	0.43
3/10/90 6:54	2599	V1-3A	8.7	4.2	1.435	12.9		4.83	0.23
3/10/90 17:40	3245	V1-3A	9.8	2.8	1.030	12.6		5.44	0.15
3/8/90 10:42	0	V1-3B	4.8	14.2	2.653	19	1840	1	1
3/8/90 13:56	141	V1-3B	5.1	13.6	2.610	18.7		1.06	0.96
3/8/90 17:25	350	V1-3B	5.8	13	2.565	18.8		1.21	0.92
3/8/90 22:34	659	V1-3B	6.3	12.1	2.493	18.4		1.31	0.85
3/9/90 8:00	1225	V1-3B	6.9	10.1	2.313	17		1.44	0.71
3/9/90 16:18	1723	V1-3B	7.4	8.5	2.140	15.9		1.54	0.6
3/10/90 6:56	2601	V1-3B	8.9	5.4	1.686	14.3		1.85	0.38
3/10/90 17:44	3249	V1-3B	9.8	3.4	1.224	13.2		2.04	0.24
3/8/90 10:45	0	V1-3C	6.2	12.4	2.518	18.6	1078	1	1
3/8/90 13:58	143	V1-3C	6.4	12.2	2.501	18.6		1.03	0.98
3/8/90 17:27	352	V1-3C	6.7	12	2.485	18.7		1.08	0.97
3/8/90 22:36	661	V1-3C	7.0	11.5	2.442	18.5		1.13	0.93
3/9/90 8:02	1227	V1-3C	7.3	9.9	2.293	17.2		1.18	0.8
3/9/90 16:20	1725	V1-3C	7.8	8.3	2.116	16.1		1.26	0.67
3/10/90 6:58	2603	V1-3C	9.0	5.3	1.668	14.3		1.45	0.43
3/10/90 17:46	3251	V1-3C	9.9	3.3	1.194	13.2		1.6	0.27
3/8/90 10:49	0	V2-1A	0.6	20.3	3.011	20.9	60	1	1
3/8/90 14:04	149	V2-1A	1.1	18.8	2.934	19.9		1.83	0.93
3/8/90 17:30	355	V2-1A	1.9	17.8	2.879	19.7		3.17	0.88
3/8/90 22:38	663	V2-1A	2.6	16.1	2.779	18.7		4.33	0.79
3/9/90 8:06	1231	V2-1A	3.3	14.1	2.646	17.4		5.5	0.69
3/9/90 16:22	1727	V2-1A	4.3	12.2	2.501	16.5		7.17	0.6
3/10/90 7:06	2611	V2-1A	5.5	9	2.197	14.5		9.17	0.44
3/10/90 17:48	3253	V2-1A	6.8	7.8	2.054	14.6		11.3	0.38
3/8/90 10:53	0	V2-1B	4.8	14.3	2.660	19.1	1610	1	1
3/8/90 14:06	151	V2-1B	5.4	12.7	2.542	18.1		1.13	0.89
3/8/90 17:35	360	V2-1B	6.5	11.4	2.434	17.9		1.35	0.8
3/8/90 22:40	665	V2-1B	7.2	9.9	2.293	17.1		1.5	0.69
3/9/90 8:08	1233	V2-1B	8.3	6.9	1.932	15.2		1.73	0.48
3/9/90 16:24	1729	V2-1B	9.4	4.7	1.548	14.1		1.96	0.33
3/10/90 7:08	2613	V2-1B	10.8	2.3	0.833	13.1		2.25	0.16
3/10/90 17:50	3255	V2-1B	11.3	1.4	0.336	12.7		2.35	0.1
3/8/90 10:57	0	V2-1C	5.8	12.9	2.557	18.7	5550	1	1
3/8/90 14:08	153	V2-1C	6.1	12.4	2.518	18.5		1.05	0.96
3/8/90 17:45	370	V2-1C	6.5	12.1	2.493	18.6		1.12	0.94
3/8/90 22:42	667	V2-1C	6.8	11.2	2.416	18		1.17	0.87
3/9/90 8:10	1235	V2-1C	7.3	9.2	2.219	16.5		1.26	0.71
3/9/90 16:26	1731	V2-1C	8.2	7.2	1.974	15.4		1.41	0.56
3/10/90 7:10	2615	V2-1C	9.5	4	1.386	13.5		1.64	0.31
3/10/90 17:52	3257	V2-1C	10.5	2.3	0.833	12.8		1.81	0.18

mo/day/yr/time	Elapsed Time (min)	Location	CO2 (%)	O2 (%)	ln O2	CO2+O2 (%)	THC µL/L	Norm CO2	Norm O2
3/8/90 11:00	0	V2-2A	0.1	20.8	3.035	20.9	60	1	1
3/8/90 14:10	155	V2-2A	0.2	20.2	3.006	20.4		2	0.97
3/8/90 17:47	372	V2-2A	0.6	19.3	2.960	19.9		6	0.93
3/8/90 22:44	669	V2-2A	1.0	18.2	2.901	19.2		10	0.88
3/9/90 8:24	1249	V2-2A	1.9	15.7	2.754	17.6		19	0.75
3/9/90 16:28	1733	V2-2A	3.1	13.2	2.580	16.3		31	0.63
3/10/90 7:12	2617	V2-2A	4.4	9.2	2.219	13.6		44	0.44
3/10/90 17:54	3259	V2-2A	6.3	6.5	1.872	12.8		63	0.31
3/8/90 11:05	0	V2-2B	4.1	16.1	2.779	20.2	2430	1	1
3/8/90 14:12	157	V2-2B	4.4	15.2	2.721	19.6		1.07	0.94
3/8/90 17:49	374	V2-2B	5.0	14.1	2.646	19.1		1.22	0.88
3/8/90 22:46	671	V2-2B	5.8	12.7	2.542	18.5		1.41	0.79
3/9/90 8:26	1251	V2-2B	6.7	9.3	2.230	16		1.63	0.58
3/9/90 16:30	1735	V2-2B	7.7	7	1.946	14.7		1.88	0.43
3/10/90 7:14	2619	V2-2B	9.5	2.5	0.916	12		2.32	0.16
3/10/90 17:56	3261	V2-2B	10.5	0.7	-0.357	11.2			
3/8/90 11:10	0	V2-2C	6.0	13.6	2.610	19.6	5112	1	1
3/8/90 14:16	161	V2-2C	6.5	12.6	2.534	19.1		1.08	0.93
3/8/90 17:52	377	V2-2C	7.0	11.8	2.468	18.8		1.17	0.87
3/8/90 22:48	673	V2-2C	7.3	10.7	2.370	18		1.22	0.79
3/9/90 8:28	1253	V2-2C	7.8	7.8	2.054	15.6		1.3	0.57
3/9/90 16:32	1737	V2-2C	8.9	5.2	1.649	14.1		1.48	0.38
3/10/90 7:16	2621	V2-2C	10.3	1	0.000	11.3		1.72	0.07
3/10/90 17:58	3263	V2-2C	11.1	0	0.000	11.1		1.85	0
3/8/90 11:15	0	V2-3A	0.5	20.5	3.020	21	115	1	1
3/8/90 14:18	163	V2-3A	1.3	18.2	2.901	19.5		2.6	0.89
3/8/90 17:54	379	V2-3A	2.3	16.5	2.803	18.8		4.6	0.8
3/8/90 22:50	675	V2-3A	3.1	15	2.708	18.1		6.2	0.73
3/9/90 8:34	1259	V2-3A	4.2	12	2.485	16.2		8.4	0.59
3/9/90 16:34	1739	V2-3A	5.6	9.8	2.282	15.4		11.2	0.48
3/10/90 7:20	2625	V2-3A	7.0	6.4	1.856	13.4		14	0.31
3/10/90 18:00	3265	V2-3A	8.6	4.2	1.435	12.8		17.2	0.2
3/8/90 11:19	0	V2-3B	4.5	15.1	2.715	19.6	1150	1	1
3/8/90 14:20	165	V2-3B	4.9	13.9	2.632	18.8		1.09	0.92
3/8/90 17:56	381	V2-3B	5.6	13	2.565	18.6		1.24	0.86
3/8/90 22:52	677	V2-3B	6.2	11.8	2.468	18		1.38	0.78
3/9/90 8:36	1261	V2-3B	7.1	9.4	2.241	16.5		1.58	0.62
3/9/90 16:36	1741	V2-3B	8.0	7.5	2.015	15.5		1.78	0.5
3/10/90 7:22	2627	V2-3B	9.5	4.2	1.435	13.7		2.11	0.28
3/10/90 18:02	3267	V2-3B	10.6	2.4	0.875	13		2.36	0.16
3/8/90 11:23	0	V2-3C	6.8	12.1	2.493	18.9	3323	1	1
3/8/90 14:22	167	V2-3C	6 6	12.1	2.493	18.7		0.97	1
3/8/90 17:58	383	V2-3C	7.2	11	2.398	18.2		1.06	0.91
3/8/90 22:54	679	V2-3C	7.5	10	2.303	17.5		1.1	0.83
3/9/90 8:38	1263	V2-3C	8.2	7.5	2.015	15.7		1.21	0.62
3/9/90 16:38	1743	V2-3C	9.4	5.5	1.705	14.9		1.38	0.45
3/10/90 7:24	2629	V2-3C	10.8	2.2	0.788	13		1.59	0.18
3/10/90 18:04	3269	V2-3C	11.8	0.4	-0.916	12.2			

mo/day/yr/time	Elapsed Time (min)	Location	CO2 (%)	O2 (%)	ln O2	CO2+O2 (%)	THC µL/L	Norm CO2	Norm O2
3/9/90 9:20	Blower for V3 off for shutdown test 4A								
3/9/90 8:55	0	V3 disch	2.7	17.5	2.862	20.2	895	1	1
3/9/90 11:30	130	V3 disch	2.5	17.3	2.851	19.8	719	0.93	0.99
3/9/90 16:40	440	V3 disch	2.9	17.3	2.851	20.2	654	1.07	0.99
3/10/90 7:35	1335	V3 disch	3.2	16.5	2.803	19.7	95	1.19	0.94
3/10/90 18:15	1975	V3 disch	3.4	15.9	2.766	19.3	32	1.26	0.91
3/11/90 3:00	2500	V3 disch	3.5	15.3	2.728	18.8	22	1.3	0.87
3/11/90 17:53	3393	V3 disch	3.8	14.7	2.688	18.5	7	1.41	0.84
3/12/90 8:15	4255	V3 disch	3.9	14.3	2.660	18.2	8	1.44	0.82
3/9/90 9:00	0	V3A	2.8	17.3	2.851	20.1	40.0	1	1
3/9/90 11:35	135	V3A	2.7	17.2	2.845	19.9	40.0	0.96	0.99
3/9/90 16:50	450	V3A	3.1	17.3	2.851	20.4	37.0	1.11	1
3/10/90 7:40	1340	V3A	3.1	16.5	2.803	19.6	7.0	1.11	0.95
3/10/90 18:20	1980	V3A	3.4	16.1	2.779	19.5	0.0	1.21	0.93
3/11/90 3:05	2505	V3A	3.4	15.5	2.741	18.9	1.0	1.21	0.9
3/11/90 18:10	3410	V3A	3.8	14.9	2.701	18.7	0.0	1.36	0.86
3/12/90 8:25	4265	V3A	3.8	14.4	2.667	18.2	1.0	1.36	0.83
3/9/90 9:05	0	V3B	2.9	17.2	2.845	20.1	65.0	1	1
3/9/90 11:40	140	V3B	2.8	17.2	2.845	20	50.0	0.97	1
3/9/90 17:00	460	V3B	3.1	17.2	2.845	20.3	31.0	1.07	1
3/10/90 7:45	1345	V3B	3.2	16.4	2.797	19.6	6.0	1.1	0.95
3/10/90 18:25	1985	V3B	3.3	15.9	2.766	19.2	2.0	1.14	0.92
3/11/90 3:10	2510	V3B	3.5	15.3	2.728	18.8	2.0	1.21	0.89
3/11/90 18:15	3415	V3B	3.8	14.8	2.695	18.6	2.0	1.31	0.86
3/12/90 8:30	4270	V3B	3.8	14.2	2.653	18	3.0	1.31	0.83
3/9/90 9:10	0	V3C	2.0	17.2	2.845	19.2	30.0	1	1
3/9/90 11:45	145	V3C	2.8	17.1	2.839	19.9	34.0	1.4	0.99
3/9/90 17:10	470	V3C	3.1	17.2	2.845	20.3	40.0	1.55	1
3/10/90 7:50	1350	V3C	3.2	16.4	2.797	19.6	10.0	1.6	0.95
3/10/90 18:30	1990	V3C	3.3	16	2.773	19.3	2.0	1.65	0.93
3/11/90 3:15	2515	V3C	3.5	15.4	2.734	18.9	1.0	1.75	0.9
3/11/90 18:20	3420	V3C	3.8	14.9	2.701	18.7	1.0	1.9	0.87
3/12/90 8:35	4275	V3C	3.8	14.2	2.653	18	2.0	1.9	0.83

Appendix I

Respiration Test 5 Data

Table 29. Summarized data for Respiration Test 5.

mo/day/yr/time		Elapsed Time (min)	Location	CO2 (%)	O2 (%)	ln O2	CO2+O2 (%)	Norm CO2	Norm O2
4/24/90	13:00	Bowers off							
4/24/90	9:06	0	V1-1A	9.1	7.7	2.041	16.8	1.00	1.00
4/24/90	16:00	180	V1-1A	9.4	7.1	1.960	16.5	1.03	0.92
4/24/90	22:08	548	V1-1A	10.4	4.4	1.482	14.8	1.14	0.57
4/25/90	8:04	1144	V1-1A	11.5	1.4	0.336	12.9	1.26	0.18
4/25/90	16:17	1637	V1-1A	12	0.1	-2.303	12.1		
4/24/90	9:08	0	V1-1B	9.4	7.6	2.028	17	1.00	1.00
4/24/90	16:04	184	V1-1B	9.4	7.6	2.028	17	1.00	1.00
4/24/90	22:10	550	V1-1B	9.7	6.9	1.932	16.6	1.03	0.91
4/25/90	8:06	1146	V1-1B	10.4	4.6	1.526	15	1.11	0.61
4/25/90	16:18	1638	V1-1B	10.8	2.9	1.065	13.7	1.15	0.38
4/25/90	21:54	1974	V1-1B	11.5	1.8	0.588	13.3	1.22	0.24
4/24/90	9:10	0	V1-1C	9.6	7.5	2.015	17.1	1.00	1.00
4/24/90	16:06	186	V1-1C	9.5	7.5	2.015	17	0.99	1.00
4/24/90	22:12	552	V1-1C	9.8	7.1	1.960	16.9	1.02	0.95
4/25/90	8:08	1148	V1-1C	10.3	5.1	1.629	15.4	1.07	0.68
4/25/90	16:20	1640	V1-1C	10.8	3.3	1.194	14.1	1.13	0.44
4/25/90	21:56	1976	V1-1C	11.4	2.2	0.788	13.6	1.19	0.29
4/24/90	9:12	0	V1-2A	5.6	13.3	2.588	18.9	1.00	1.00
4/24/90	16:08	188	V1-2A	6.5	10.9	2.389	17.4	1.16	0.82
4/24/90	22:14	554	V1-2A	7.9	6.3	1.841	14.2	1.41	0.47
4/25/90	8:10	1150	V1-2A	9.5	2.2	0.788	11.7	1.70	0.17
4/25/90	16:22	1642	V1-2A	10.3	0		10.3		
4/24/90	9:14	0	V1-2B	6.3	12.1	2.493	18.4	1.00	1.00
4/24/90	16:10	190	V1-2B	7	11	2.398	18	1.11	0.91
4/24/90	22:16	556	V1-2B	7.8	8.9	2.186	16.7	1.24	0.74
4/25/90	8:12	1152	V1-2B	9.1	5.5	1.705	14.6	1.44	0.45
4/25/90	16:24	1644	V1-2B	10	3.1	1.131	13.1	1.59	0.26
4/25/90	21:58	1978	V1-2B	10.9	1.4	0.336	12.3	1.73	0.12
4/24/90	9:16	0	V1-2C	7.7	10.2	2.322	17.9	1.00	1.00
4/24/90	16:12	192	V1-2C	8.2	9.7	2.272	17.9	1.06	0.95
4/24/90	22:20	560	V1-2C	8.6	8.8	2.175	17.4	1.12	0.86
4/25/90	8:14	1154	V1-2C	9.3	6.2	1.825	15.5	1.21	0.61
4/25/90	16:26	1646	V1-2C	9.8	4	1.386	13.8	1.27	0.39
4/25/90	22:00	1980	V1-2C	10.8	2.3	0.833	13.1	1.40	0.23
4/24/90	9:18	0	V1-3A	4.6	14.2	2.653	18.8	1.00	1.00
4/24/90	16:14	194	V1-3A	6.3	11.2	2.416	17.5	1.37	0.79
4/24/90	22:24	564	V1-3A	7.8	8.5	2.140	16.3	1.70	0.60
4/25/90	8:16	1156	V1-3A	9.1	5.1	1.629	14.2	1.98	0.36
4/25/90	16:28	1648	V1-3A	10	2.9	1.065	12.9	2.17	0.20
4/25/90	22:02	1982	V1-3A	11.2	1.2	0.182	12.4	2.43	0.08
4/24/90	9:20	0	V1-3B	7.5	10.5	2.351	18	1.00	1.00
4/24/90	16:16	196	V1-3B	7.7	10.3	2.332	18	1.03	0.98
4/24/90	22:26	566	V1-3B	8.3	9	2.197	17.3	1.11	0.86
4/25/90	8:18	1158	V1-3B	9.3	6.2	1.825	15.5	1.24	0.59
4/25/90	16:30	1650	V1-3B	10	4.2	1.435	14.2	1.33	0.40
4/25/90	22:04	1984	V1-3B	10.8	2.8	1.030	13.6	1.44	0.27

mo/day/yr/time	Elapsed Time (min)	Location	CO2 (%)	O2 (%)	ln O2	CO2+O2 (%)	Norm CO2	Norm O2
4/24/90 9:22	0	V1-3C	8	10	2.303	18	1	1
4/24/90 16:18	198	V1-3C	8.2	9.9	2.293	18.1	1.025	0.99
4/24/90 22:28	568	V1-3C	8.7	9.1	2.208	17.8	1.088	0.91
4/25/90 8:20	1160	V1-3C	9.2	6.8	1.917	16	1.15	0.68
4/25/90 16:32	1652	V1-3C	9.8	4.6	1.526	14.4	1.225	0.46
4/25/90 22:06	1986	V1-3C	10.7	3.2	1.163	13.9	1.338	0.32
4/24/90 9:30	0	V2-1A	1.7	18.5	2.918	20.2	1	1
4/24/90 16:20	200	V2-1A	3.1	16.2	2.785	19.3	1.824	0.876
4/24/90 22:30	570	V2-1A	4.1	13.3	2.588	17.4	2.412	0.719
4/25/90 8:22	1162	V2-1A	5.4	10.5	2.351	15.9	3.176	0.568
4/25/90 16:34	1654	V2-1A	6.5	9	2.197	15.5	3.824	0.486
4/25/90 22:08	1988	V2-1A	7.7	6.5	1.872	14.2	4.529	0.351
4/26/90 8:20	2600	V2-1A	8.9	4.5	1.504	13.4	5.235	0.243
4/24/90 9:32	0	V2-1B	7.8	9.2	2.219	17	1	1
4/24/90 16:22	202	V2-1B	9	7	1.946	16	1.154	0.761
4/24/90 22:32	572	V2-1B	10.6	4.2	1.435	14.8	1.359	0.457
4/25/90 8:24	1164	V2-1B	11.9	1.9	0.642	13.8	1.526	0.207
4/25/90 16:35	1655	V2-1B	12.2	0.9	-0.105	13.1		
4/24/90 9:34	0	V2-1C	9.9	6.2	1.825	16.1	1	1
4/24/90 16:24	204	V2-1C	10.2	6.1	1.808	16.3	1.03	0.984
4/24/90 22:34	574	V2-1C	10.8	5	1.609	15.8	1.091	0.806
4/25/90 8:26	1166	V2-1C	11.5	2.6	0.956	14.1	1.162	0.419
4/25/90 16:36	1656	V2-1C	12.2	1.1	0.095	13.3	1.232	0.177
4/24/90 9:36	0	V2-2A	0.6	20.2	3.006	20.8	1	1
4/24/90 16:26	206	V2-2A	1.2	18.3	2.907	19.5	2	0.906
4/24/90 22:36	576	V2-2A	2.8	15.8	2.760	18.6	4.667	0.782
4/25/90 8:28	1168	V2-2A	4.2	11.9	2.477	16.1	7	0.589
4/25/90 16:38	1658	V2-2A	5.4	9.7	2.272	15.1	9	0.48
4/25/90 22:10	1990	V2-2A	6.5	7.8	2.054	14.3	10.83	0.386
4/26/90 8:22	2602	V2-2A	7.4	5.3	1.668	12.7	12.33	0.262
4/24/90 9:38	0	V2-2B	9.4	8.3	2.116	17.7	1	1
4/24/90 16:28	208	V2-2B	8.4	9.5	2.251	17.9	0.894	1.145
4/24/90 22:38	578	V2-2B	9.5	7.5	2.015	17	1.011	0.904
4/25/90 8:30	1170	V2-2B	10.6	3.9	1.361	14.5	1.128	0.47
4/25/90 16:40	1660	V2-2B	11.2	1.7	0.531	12.9	1.191	0.205
4/25/90 22:12	1992	V2-2B	12.4	0.4	-0.916	12.8		
4/24/90 9:40	0	V2-2C	12.8	3.3	1.194	16.1	1	1
4/24/90 16:30	210	V2-2C	12.6	4.5	1.504	17.1	0.984	1.364
4/24/90 22:40	580	V2-2C	12.7	3.7	1.308	16.4	0.992	1.121
4/25/90 8:32	1172	V2-2C	13.1	1.1	0.095	14.2	1.023	0.333
4/25/90 16:42	1662	V2-2C	13	0		13		
4/24/90 9:42	0	V2-3A	0.9	19.5	2.970	20.4	1	1
4/24/90 16:32	212	V2-3A	2.8	16.5	2.803	19.3	3.111	0.846
4/24/90 22:42	582	V2-3A	4.2	13.9	2.632	18.1	4.667	0.713
4/25/90 8:34	1174	V2-3A	5.5	10.3	2.332	15.8	6.111	0.528
4/25/90 16:44	1664	V2-3A	6.8	8.2	2.104	15	7.556	0.421
4/25/90 22:14	1994	V2-3A	7.6	7.2	1.974	14.8	8.444	0.369
4/26/90 8:24	2604	V2-3A	8.2	4.9	1.589	13.1	9.111	0.251

mo/day/yr/time		Elapsed Time (min)	Location	CO2 (%)	O2 (%)	ln O2	CO2+O2 (%)	Norm CO2	Norm O2
4/24/90	9:44	0	V2-3B	6.5	12.4	2.518	18.9	1	1
4/24/90	16:34	214	V2-3B	6.7	12	2.485	18.7	1.031	0.968
4/24/90	22:44	584	V2-3B	7.6	10.2	2.322	17.8	1.169	0.823
4/25/90	8:36	1176	V2-3B	8.8	6.8	1.917	15.6	1.354	0.548
4/25/90	16:46	1666	V2-3B	9.5	4.6	1.526	14.1	1.462	0.371
4/25/90	22:16	1996	V2-3B	10.6	3.4	1.224	14	1.631	0.274
4/26/90	8:26	2606	V2-3B	11.2	1.9	0.642	13.1	1.723	0.153
4/24/90	9:46	0	V2-3C	10.2	7.2	1.974	17.4	1	1
4/24/90	16:36	216	V2-3C	9.5	8.2	2.104	17.7	0.931	1.139
4/24/90	22:46	586	V2-3C	10	7.1	1.960	17.1	0.98	0.986
4/25/90	8:38	1178	V2-3C	10.8	4.1	1.411	14.9	1.059	0.569
4/25/90	16:48	1668	V2-3C	11.5	1.9	0.642	13.4	1.127	0.264
4/25/90	22:18	1998	V2-3C	12.4	0.8	-0.223	13.2		
4/24/90	9:55	0	V3A	1.5	19.2	2.955	20.7	1	1
4/25/90	8:40	1180	V3A	1.7	18.6	2.923	20.3	1.133	0.969
4/25/90	16:56	1676	V3A	2	18.4	2.912	20.4	1.333	0.958
4/26/90	8:32	2612	V3A	2.2	18.2	2.901	20.4	1.467	0.948
4/24/90	9:58	0	V3B	1.5	19.2	2.955	20.7	1	1
4/25/90	8:42	1182	V3B	1.8	18.6	2.923	20.4	1.2	0.969
4/25/90	16:58	1678	V3B	1.9	18.4	2.912	20.3	1.267	0.958
4/26/90	8:34	2614	V3B	2.2	18.2	2.901	20.4	1.467	0.948
4/24/90	10:00	0	V3C	1.6	19.2	2.955	20.8	1	1
4/25/90	8:44	1184	V3C	1.8	18.6	2.923	20.4	1.125	0.969
4/25/90	17:00	1680	V3C	1.9	18.4	2.912	20.3	1.188	0.958
4/26/90	8:36	2616	V3C	2.2	18.2	2.901	20.4	1.375	0.948
4/24/90	10:04	0	V4A	1.3	19.5	2.970	20.8	1	1
4/25/90	8:50	1190	V4A	1.3	19.3	2.960	20.6	1	0.99
4/25/90	17:02	1682	V4A	1.2	19.8	2.986	21	0.923	1.015
4/26/90	8:38	2618	V4A	1.5	19.3	2.960	20.8	1.154	0.99
4/24/90	10:06	0	V4B	1.4	19.4	2.965	20.8	1	1
4/25/90	8:52	1192	V4B	1.4	19.2	2.955	20.6	1	0.99
4/25/90	17:04	1684	V4B	1.3	19.6	2.976	20.9	0.929	1.01
4/26/90	8:40	2620	V4B	1.5	19.3	2.960	20.8	1.071	0.995
4/24/90	10:08	0	V4C	1.6	19.2	2.955	20.8	1	1
4/25/90	8:54	1194	V4C	1.5	19.2	2.955	20.7	0.938	1
4/25/90	17:06	1686	V4C	1.5	19.4	2.965	20.9	0.938	1.01
4/26/90	8:42	2622	V4C	1.6	19.2	2.955	20.8	1	1

Appendix J

Zero- and First-Order Plots of Respiration Test Data

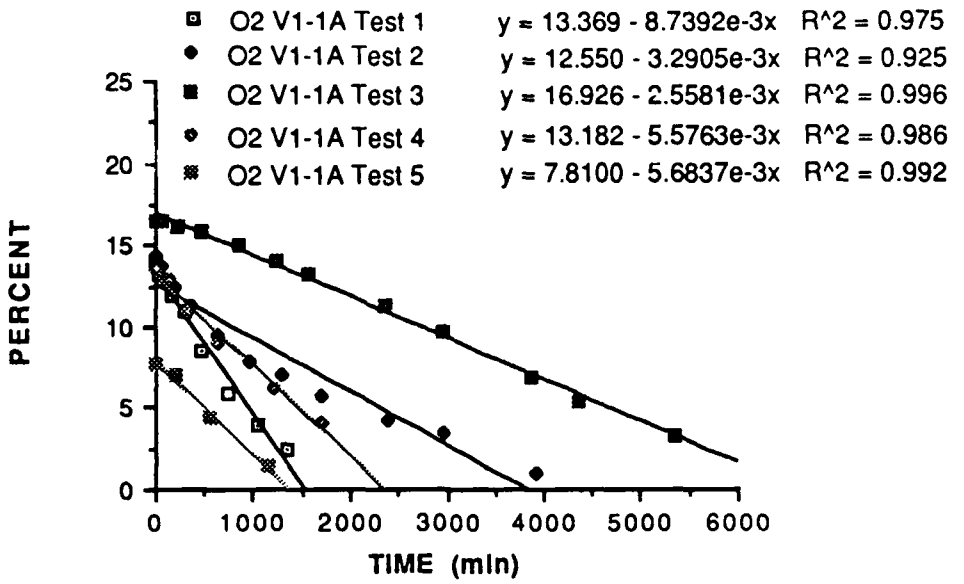

Figure 84. Zero order plot of O_2 consumption measured at V1-1A.

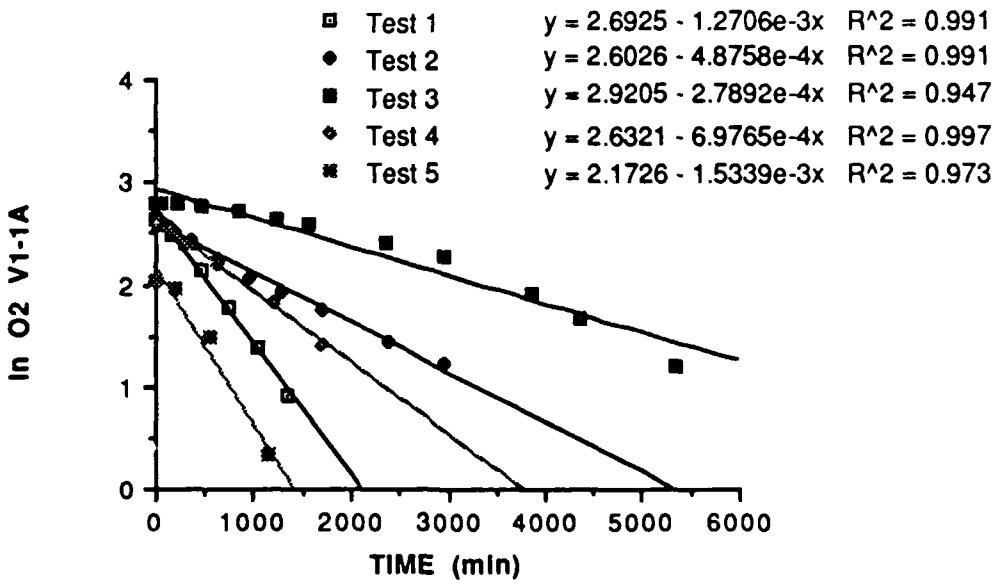

Figure 85. First order plot of O_2 consumption measured at V1-1A.

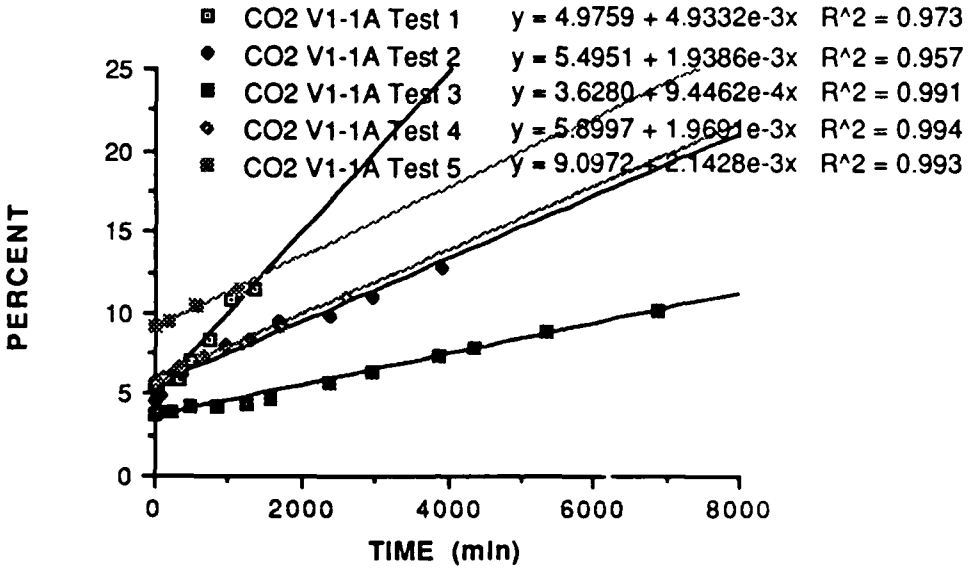

Figure 86. Zero order plot of CO_2 production measured at V1-1A.

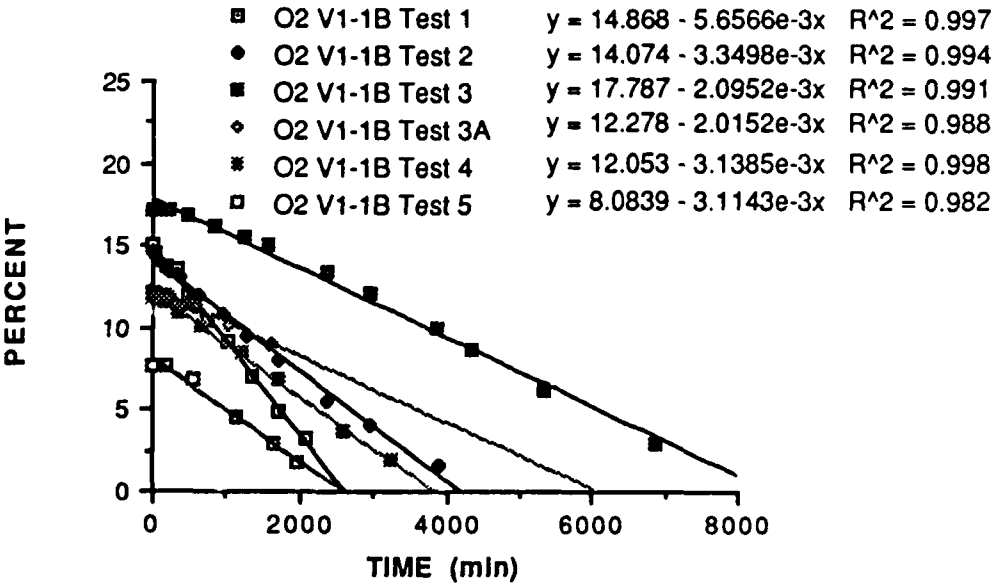

Figure 87. Zero order plot of O_2 production measured at V1-1B.

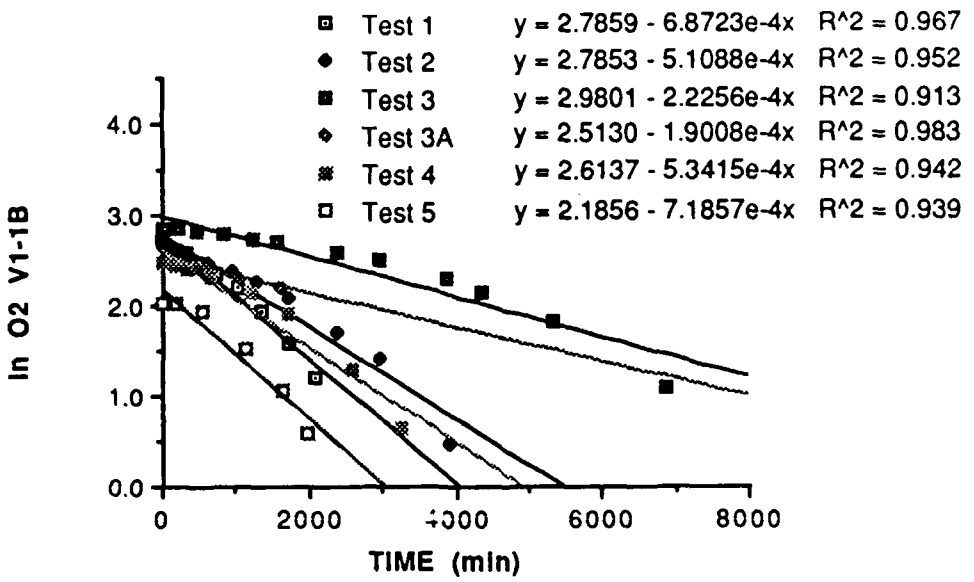

Figure 88. First order plot of O_2 consumption measured at V1-1B.

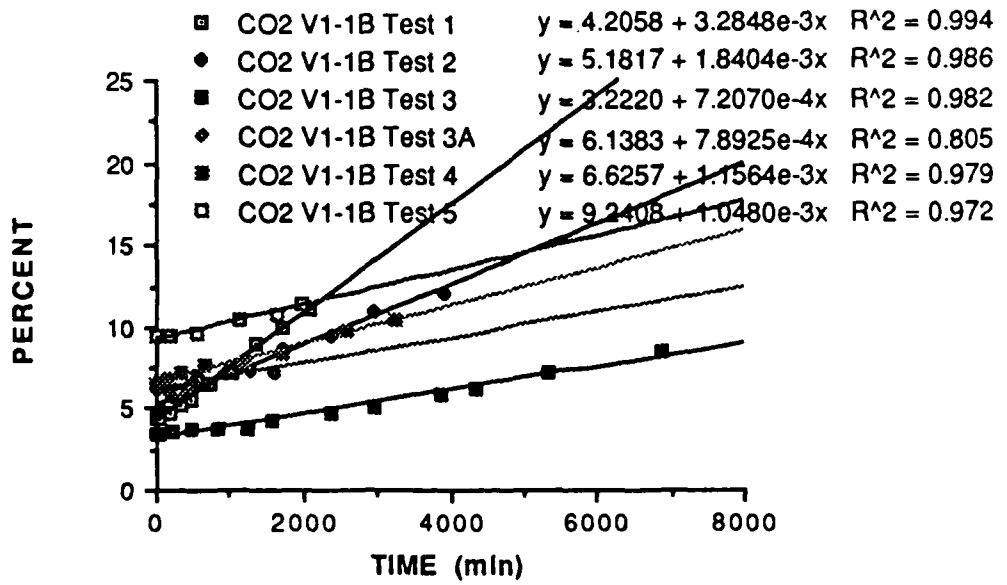

Figure 89. Zero order plot of CO_2 production measured at V1-1B.

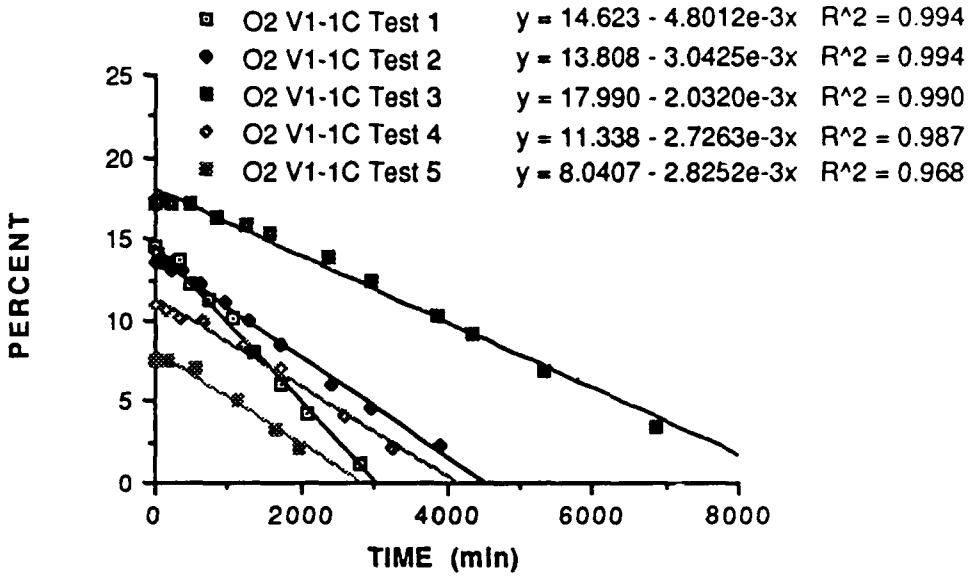

Figure 90. Zero order plot of O_2 production measured at V1-1C.

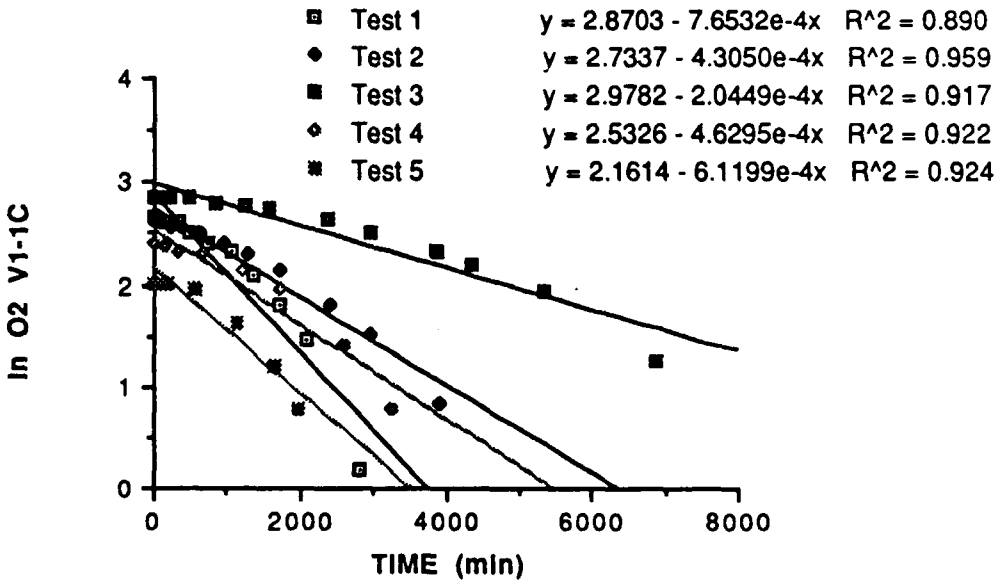

Figure 91. First order plot of O_2 consumption measured at V1-1C.

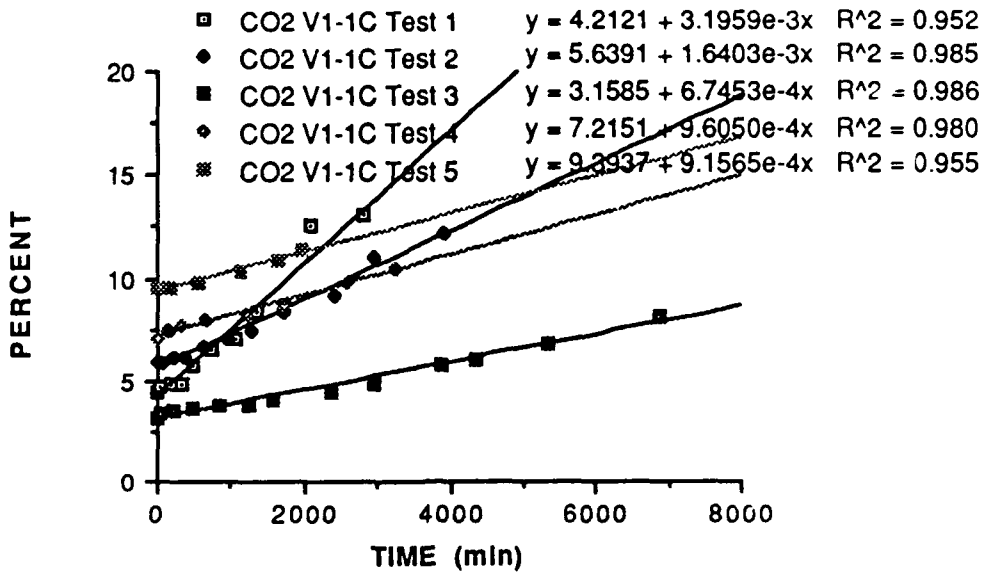

Figure 92. Zero order plot of CO_2 production measured at V1-1C.

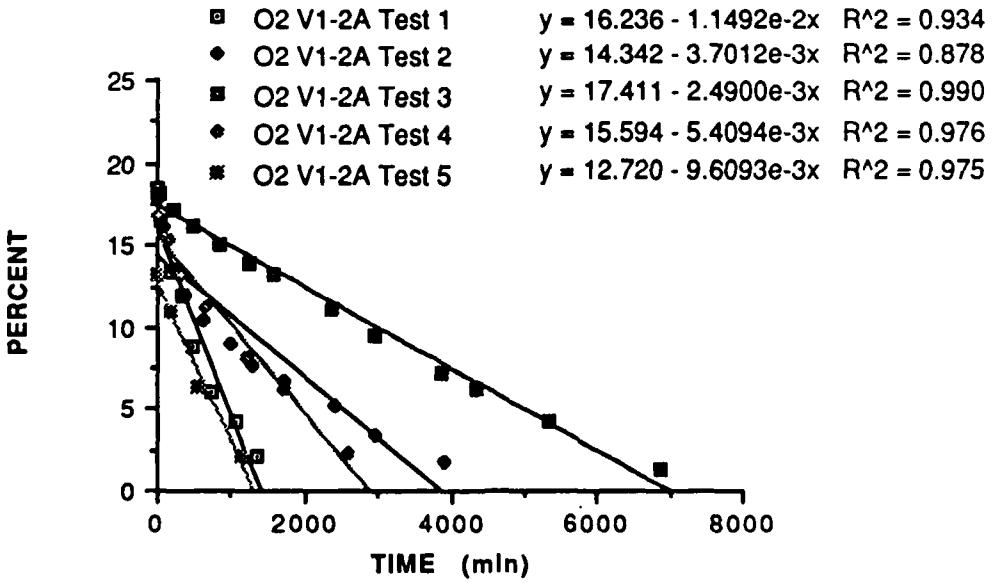

Figure 93. Zero order plot of O_2 consumption measured at V1-2A.

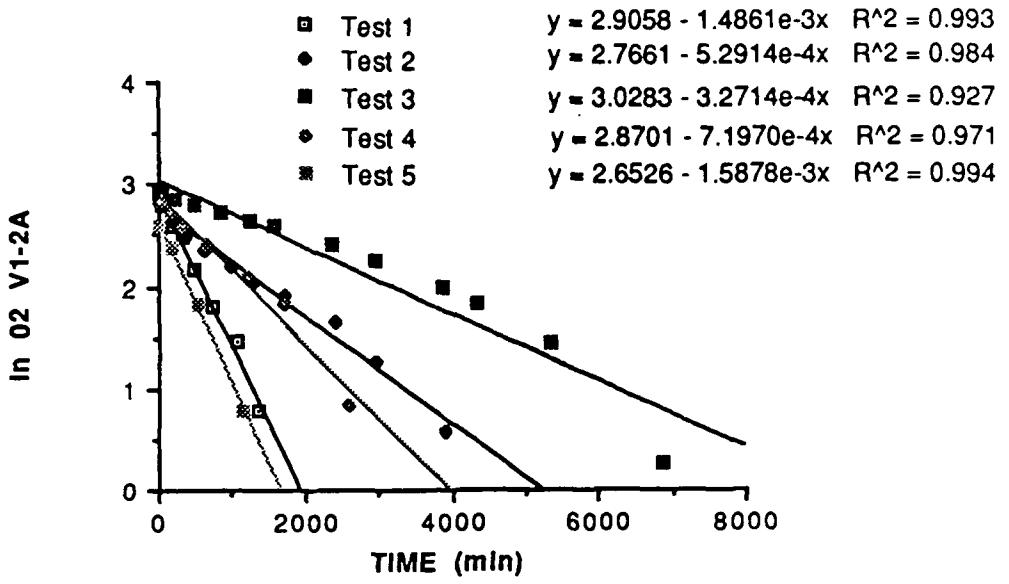

Figure 94. First order plot of O_2 consumption measured at V1-2A.

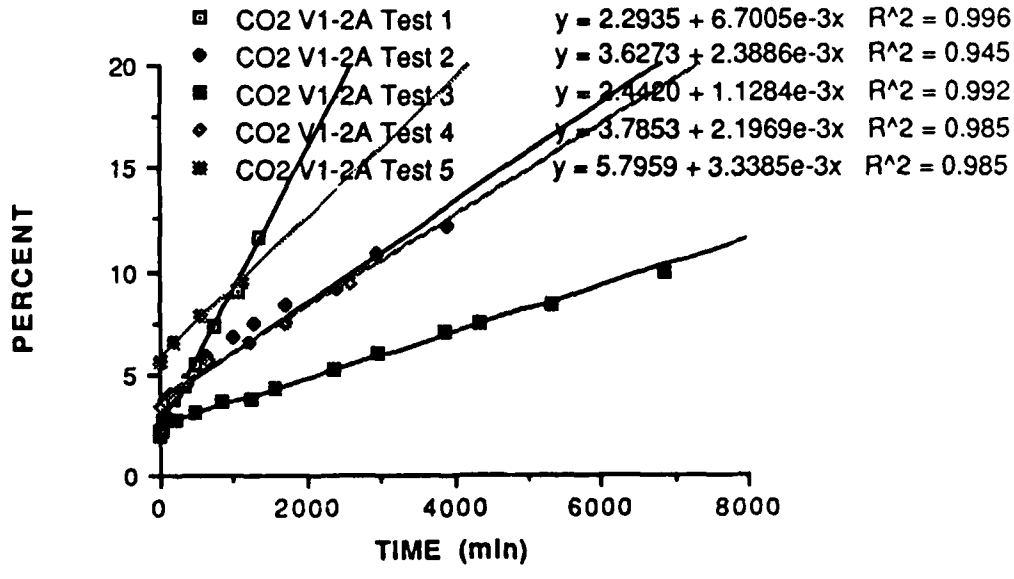

Figure 95. Zero order plot of CO_2 production measured at V1-2A.

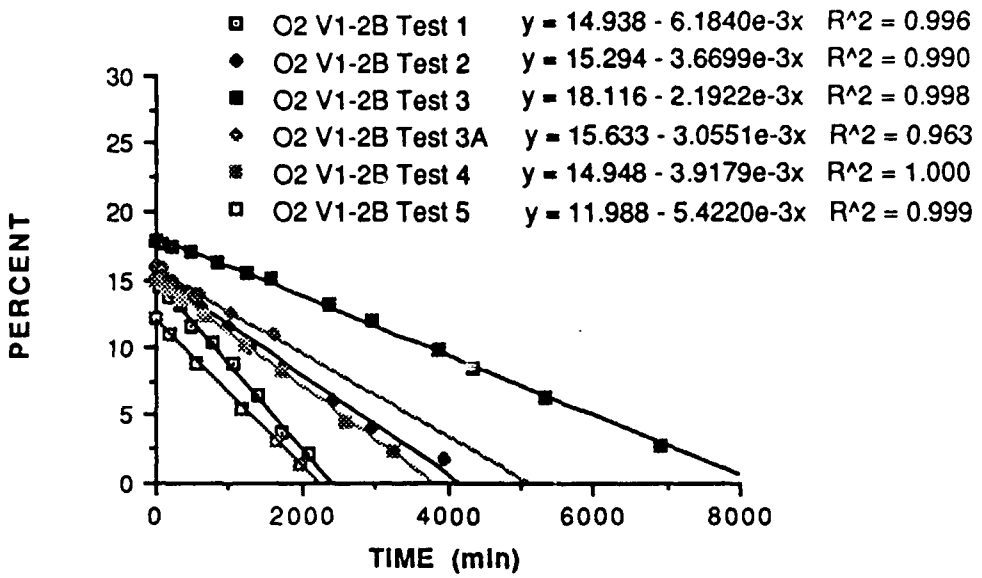

Figure 96. Zero order plot of O_2 consumption measured at V1-2B.

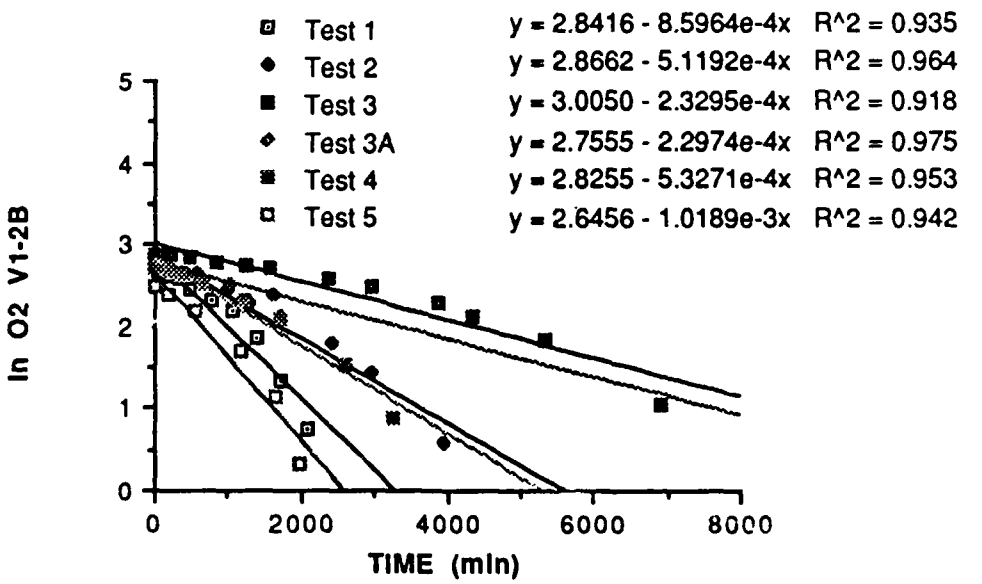

Figure 97. First order plot of O_2 consumption measured at V1-2B.

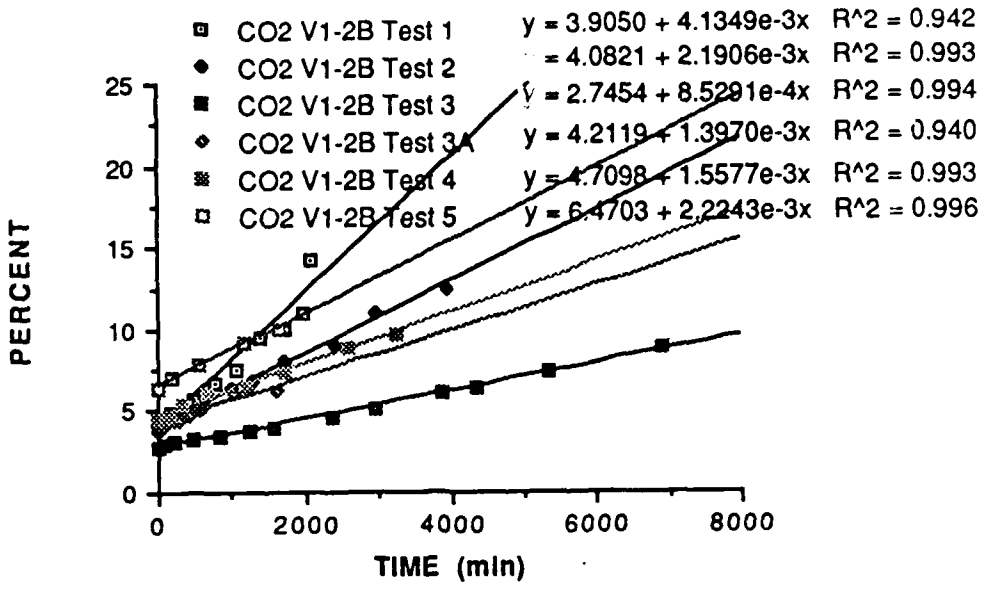

Figure 98. Zero order plot of CO_2 production measured at V1-2B.

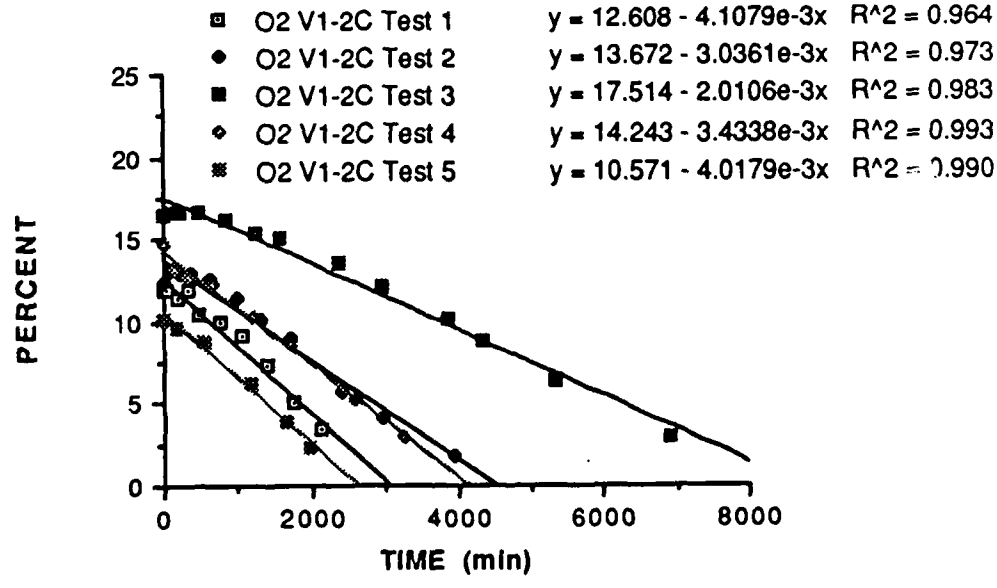

Figure 99. Zero order plot of O_2 consumption measured at V1-2C.

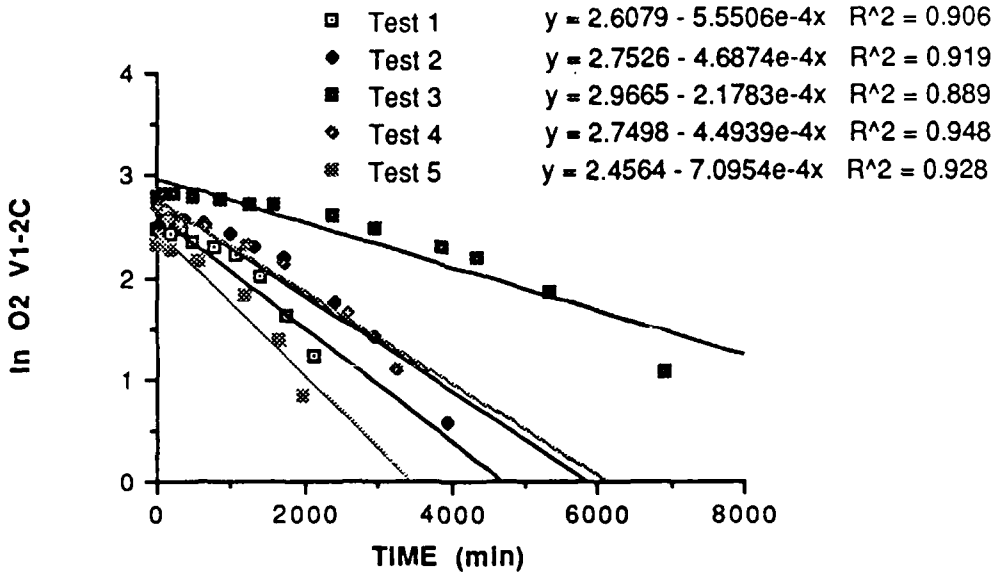

Figure 100. First order plot of O_2 consumption measured at V1-2C.

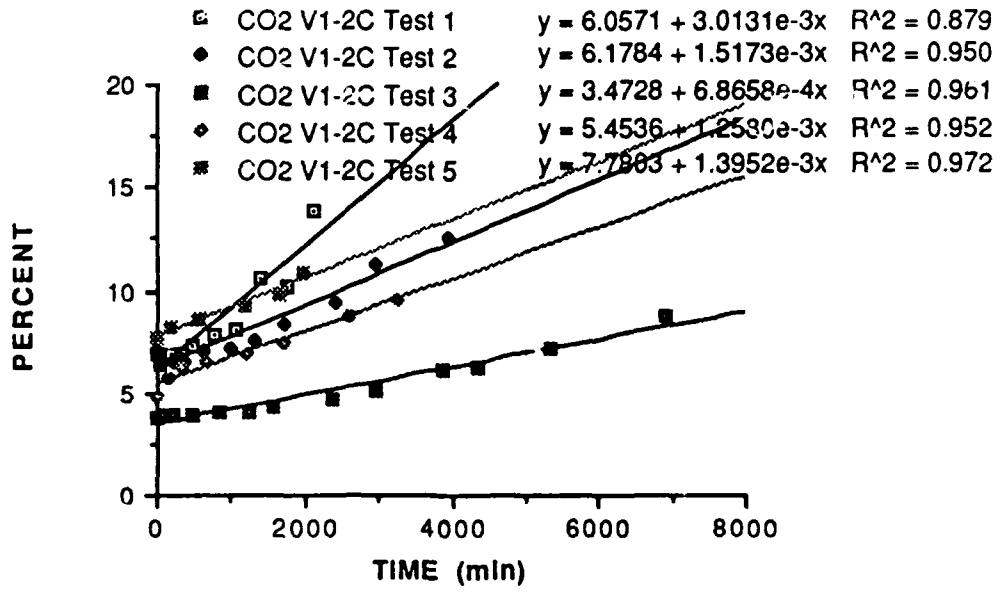

Figure 101. Zero order plot of CO_2 production measured at V1-2C.

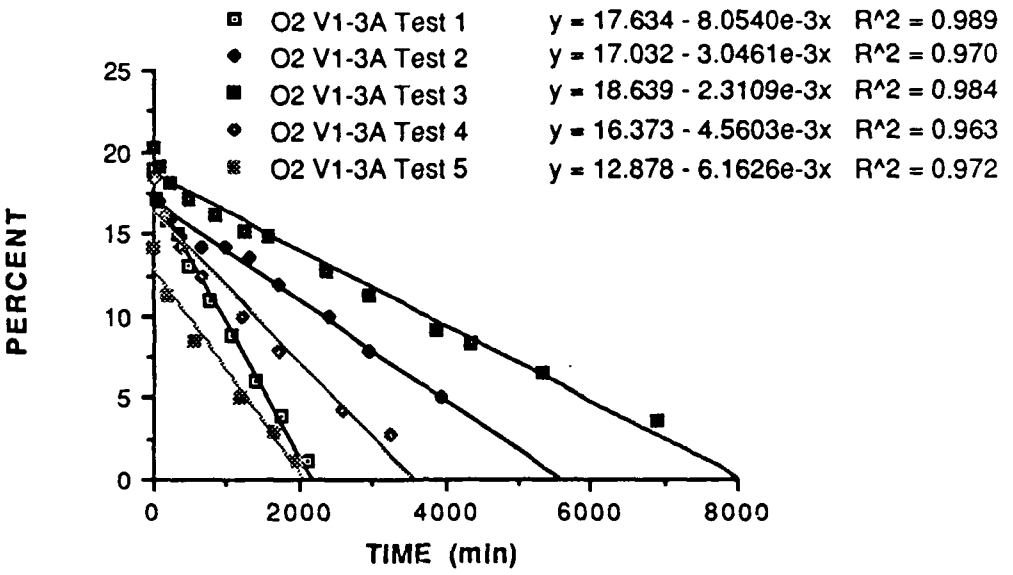

Figure 102. Zero order plot of O_2 consumption measured at V1-3A.

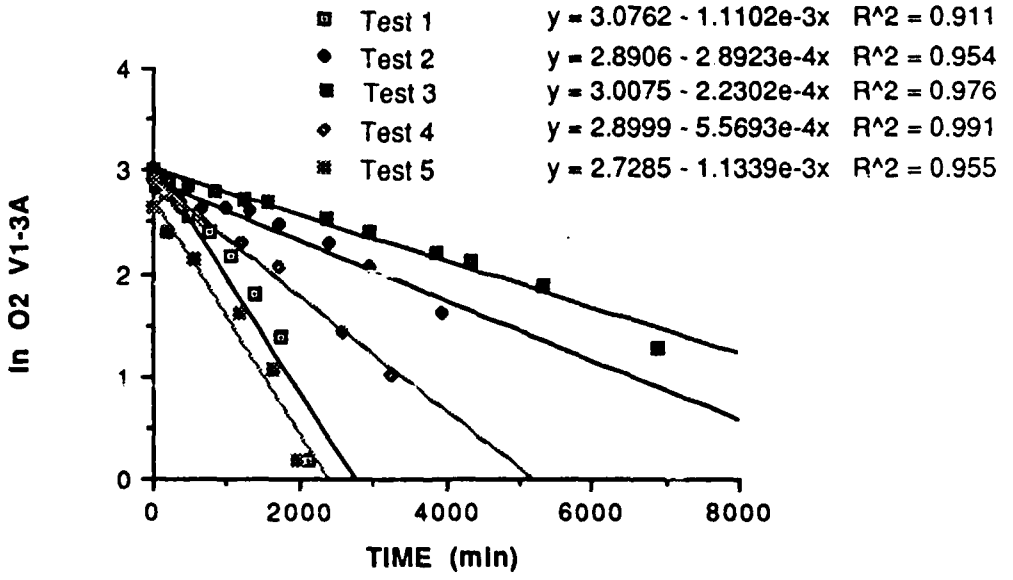

Figure 103. First order plot of O_2 consumption measured at V1-3A.

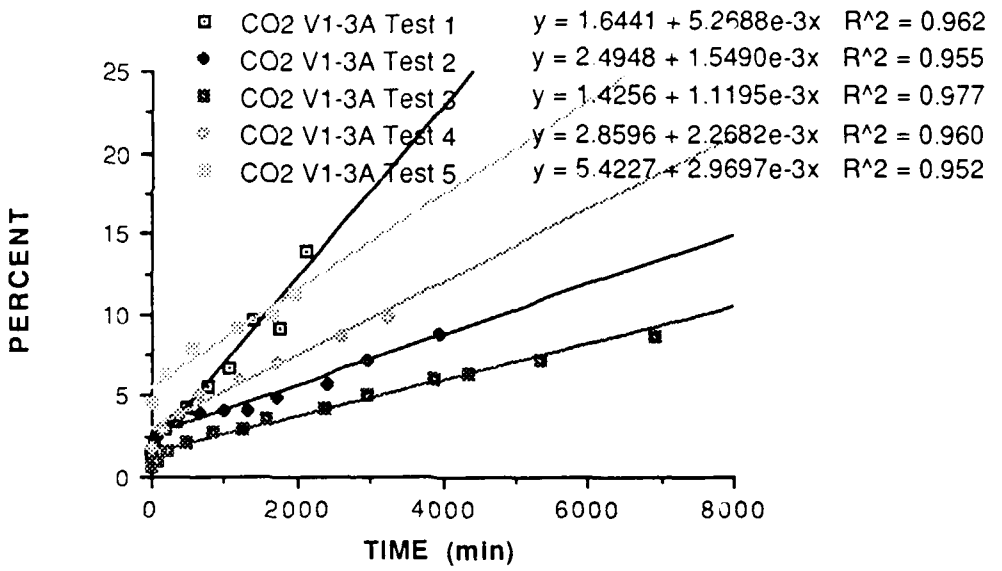

Figure 104. Zero order plot of CO_2 production measured at V1-3A.

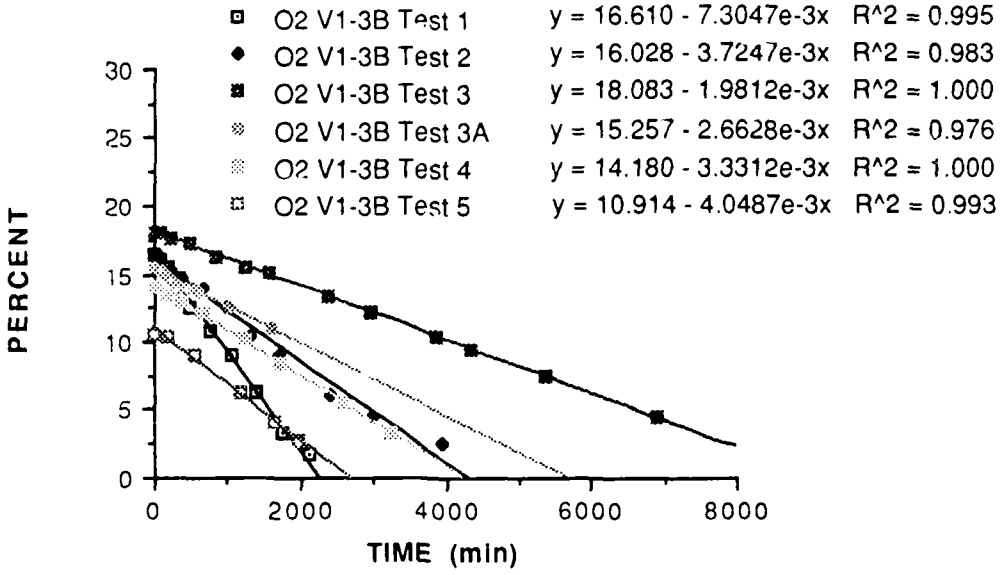

Figure 105. Zero order plot of O_2 consumption measured at V1-3B.

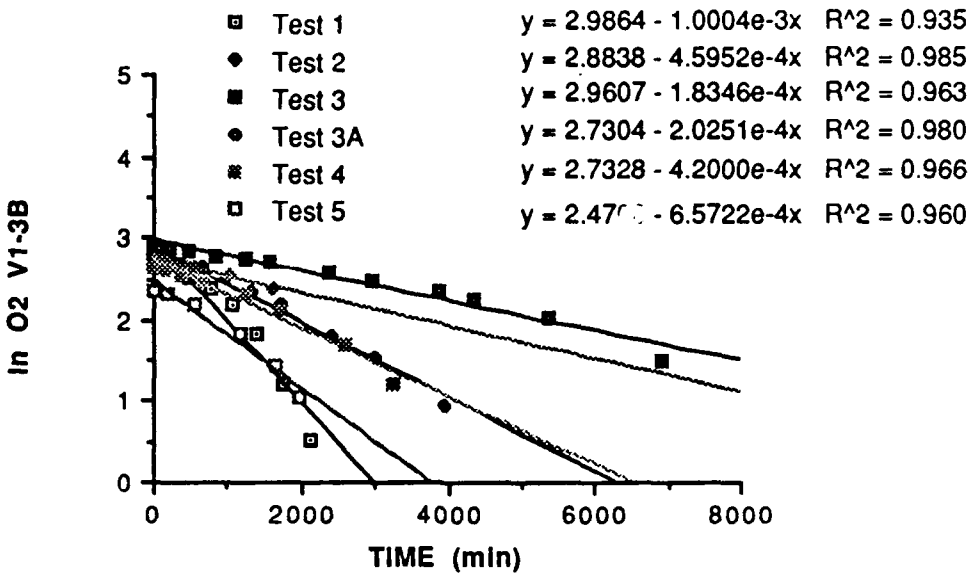

Figure 106. First order plot of O_2 consumption measured at V1-3B.

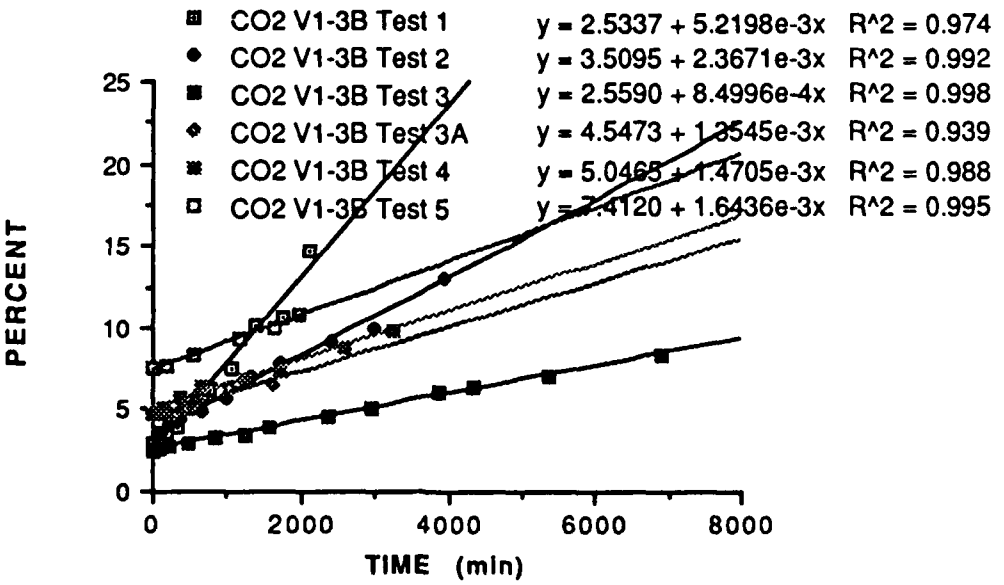

Figure 107. Zero order plot of CO_2 production measured at V1-3B.

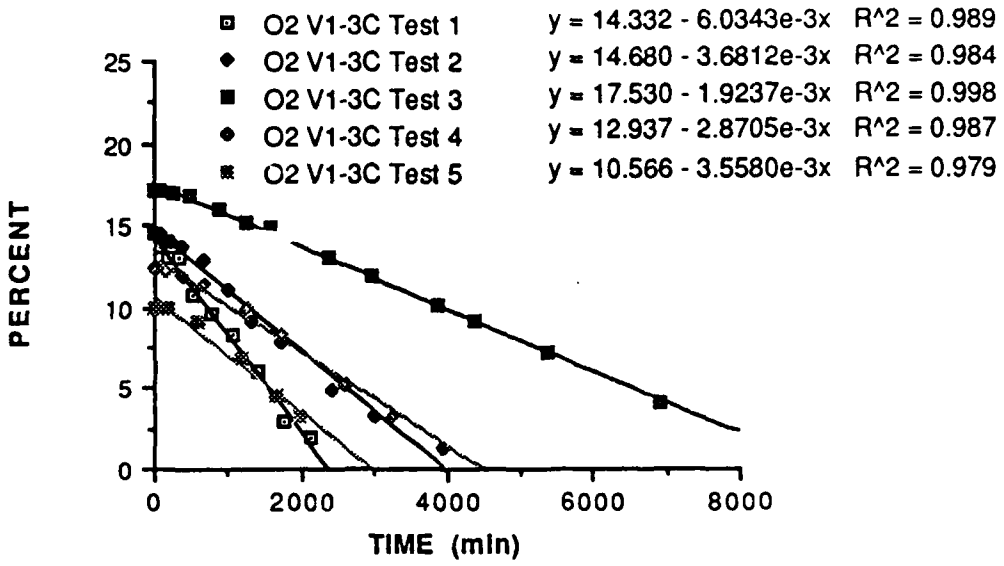

Figure 108. Zero order plot of O_2 consumption measured at V1-3C.

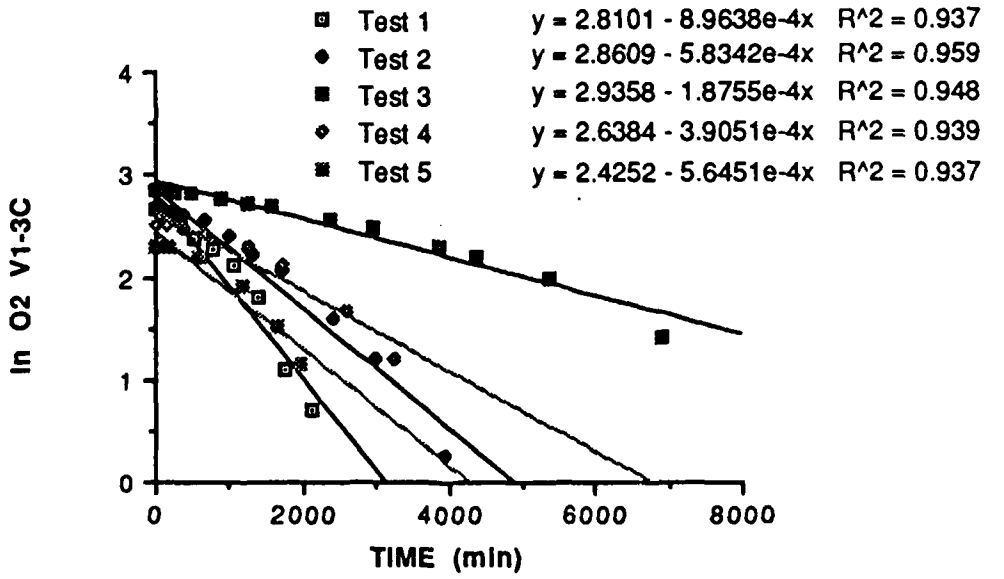

Figure 109. First order plot of O_2 consumption measured at V1-3C.

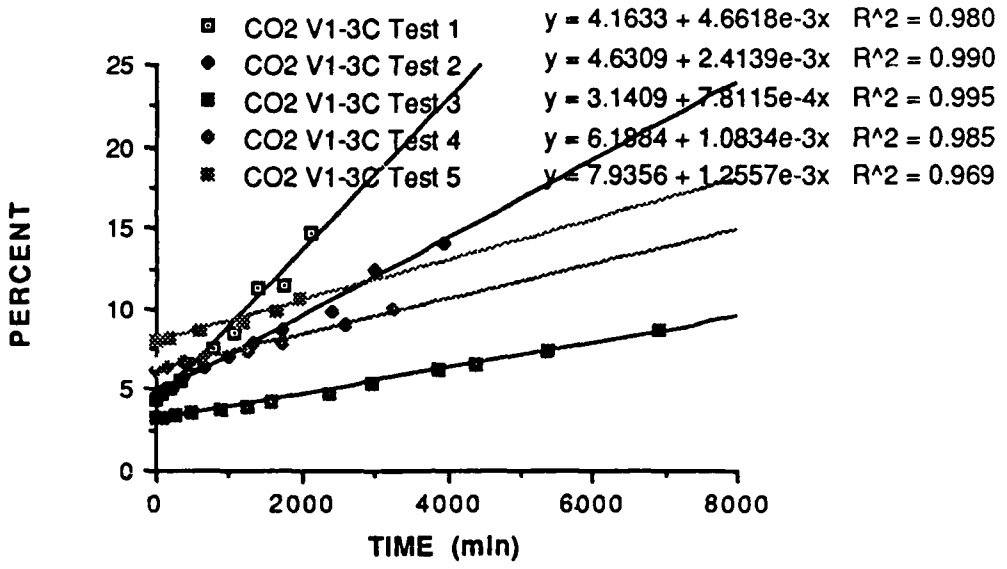

Figure 110. Zero order plot of CO_2 production measured at V1-3C.

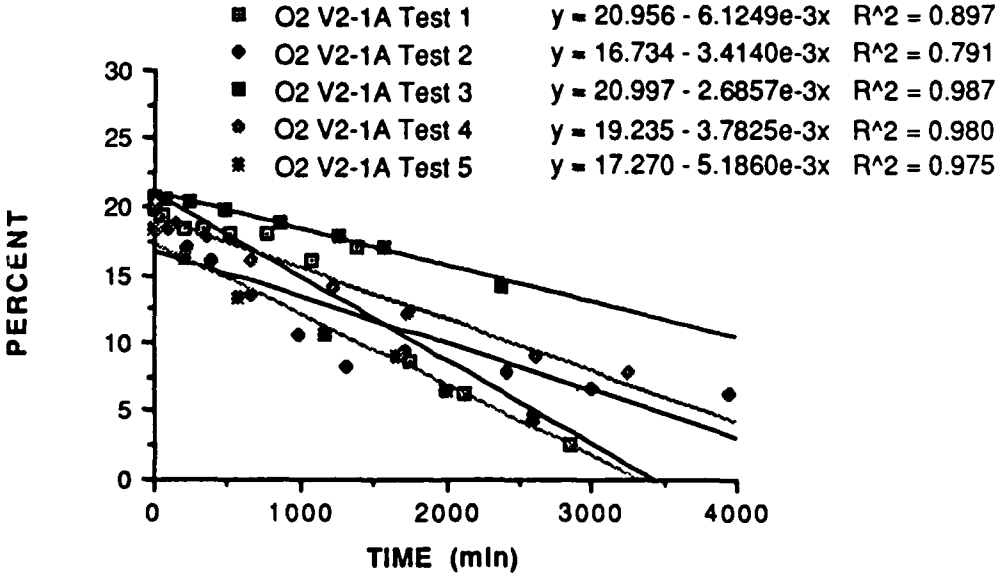

Figure 111. Zero order plot of O_2 consumption measured at V2-1A.

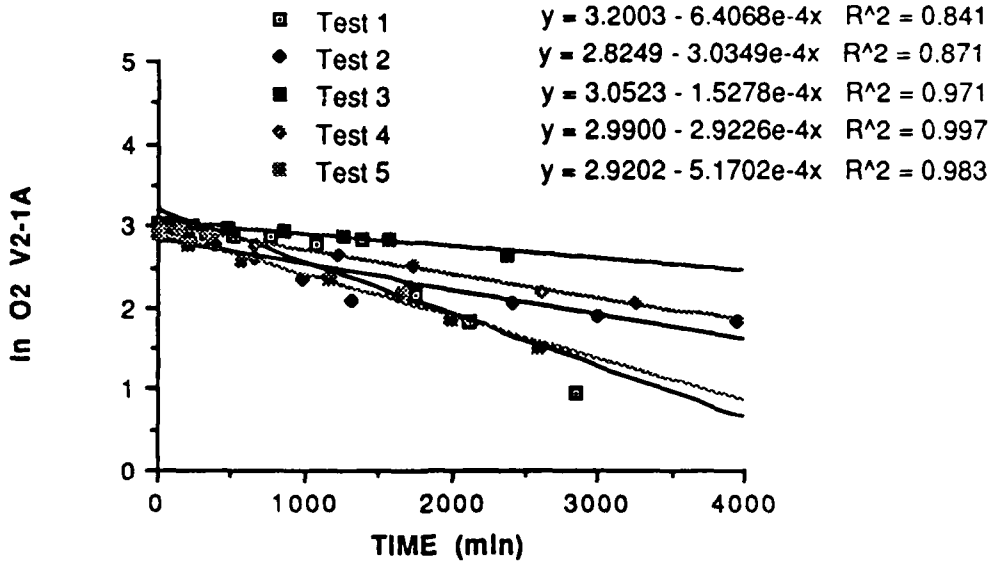

Figure 112. First order plot of O_2 consumption measured at V2-1A.

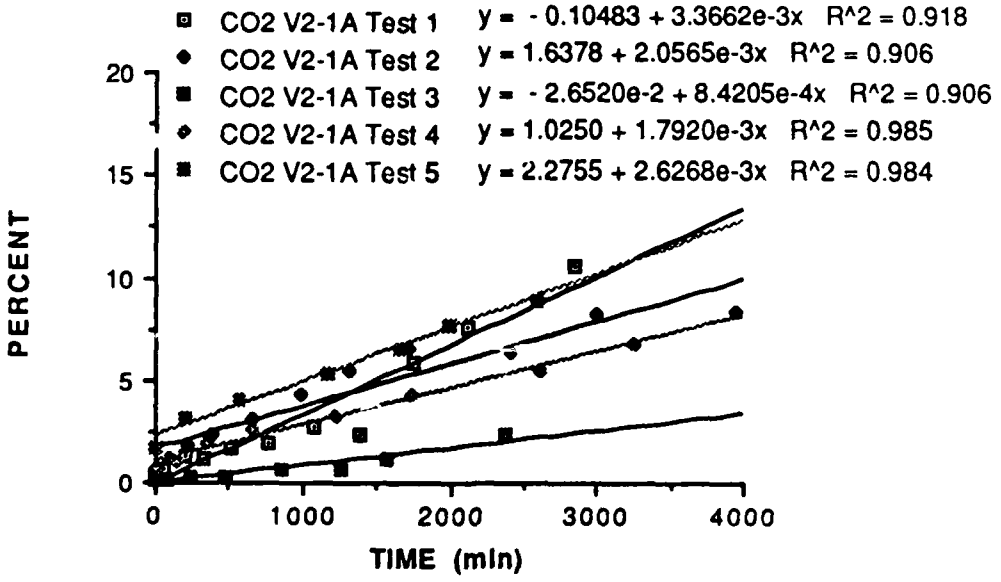

Figure 113. Zero order plot of CO_2 production measured at V2-1A.

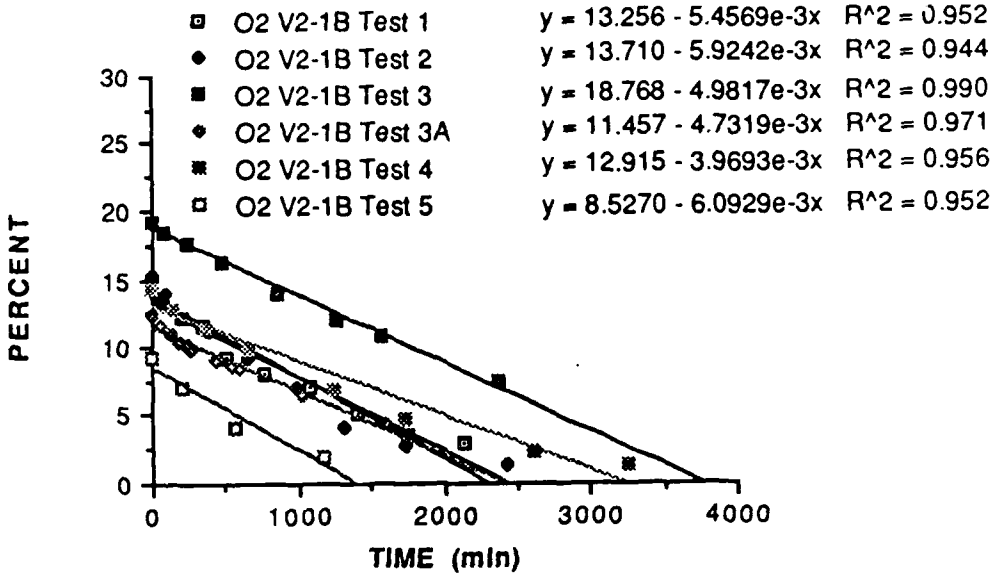

Figure 114. Zero order plot of O_2 production measured at V2-1B.

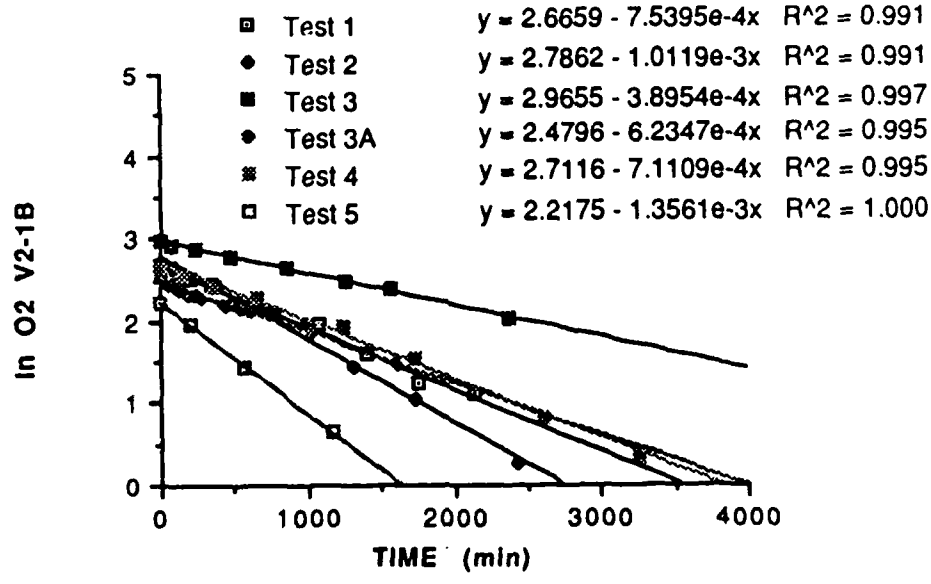

Figure 115. First order plot of O_2 consumption measured at V2-1B.

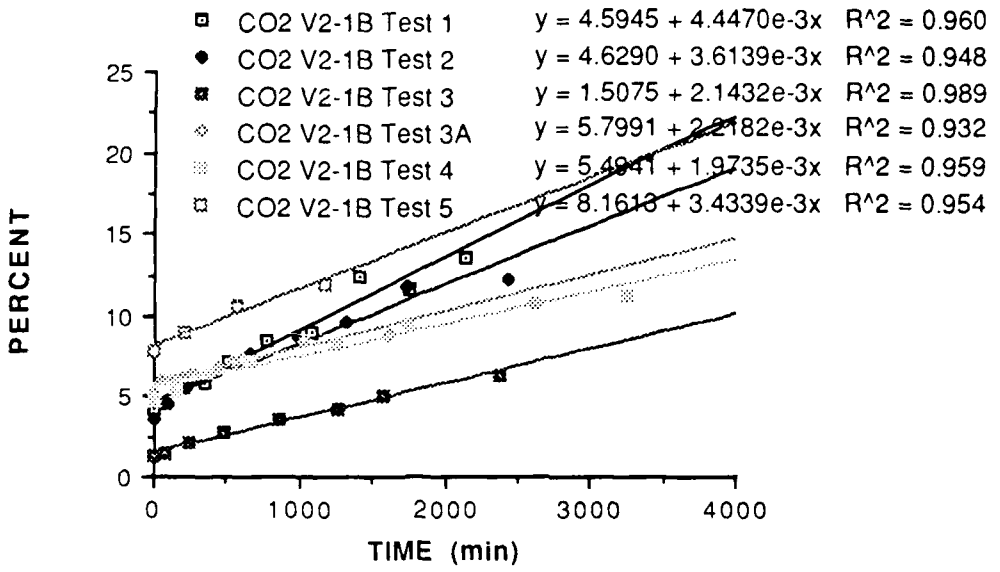

Figure 116. Zero order plot of CO_2 production measured at V2-1B.

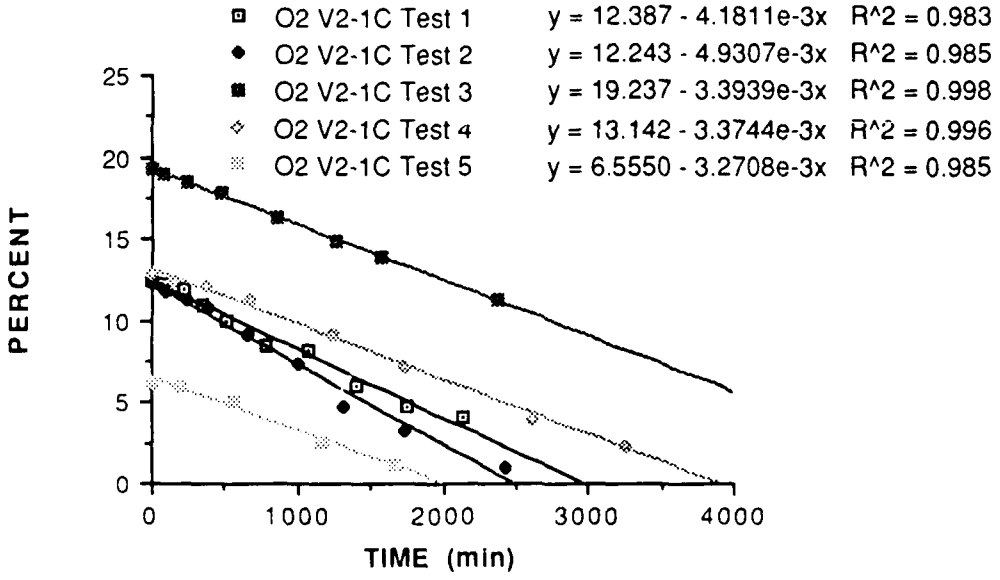

Figure 117. Zero order plot of O_2 consumption measured at V2-1C.

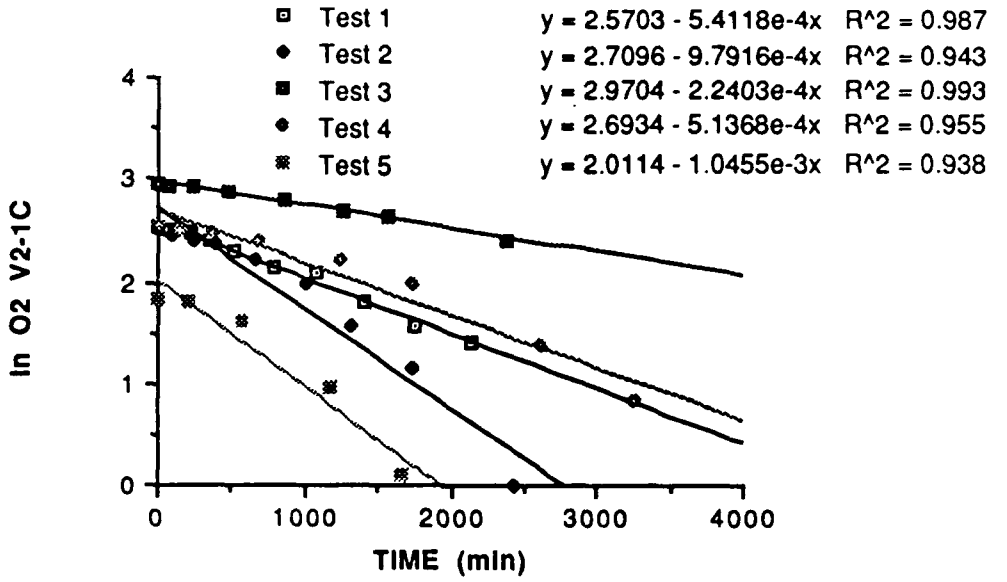

Figure 118. First order plot of O_2 consumption measured at V2-1C.

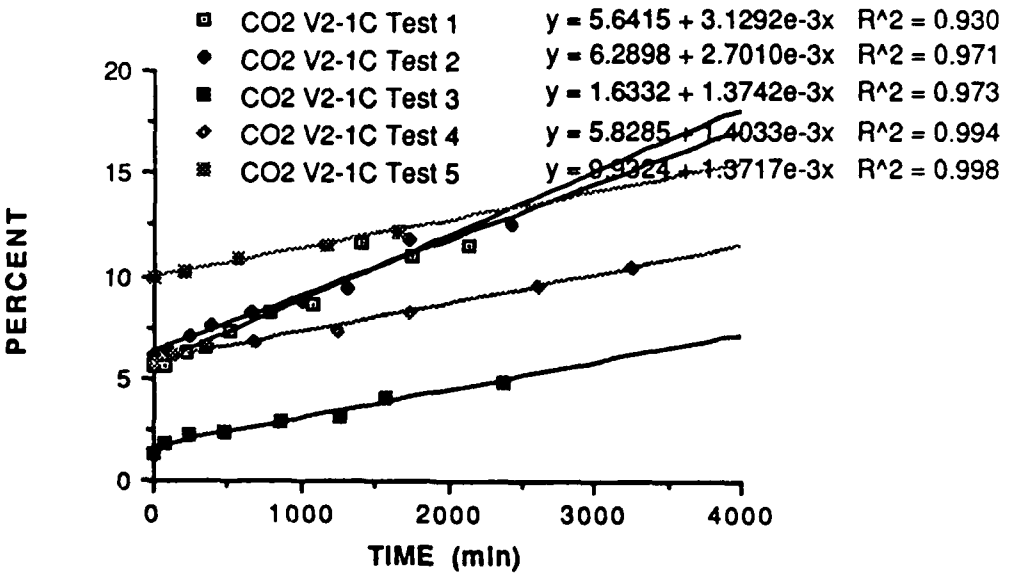

Figure 119. Zero order plot of CO_2 production measured at V2-1C.

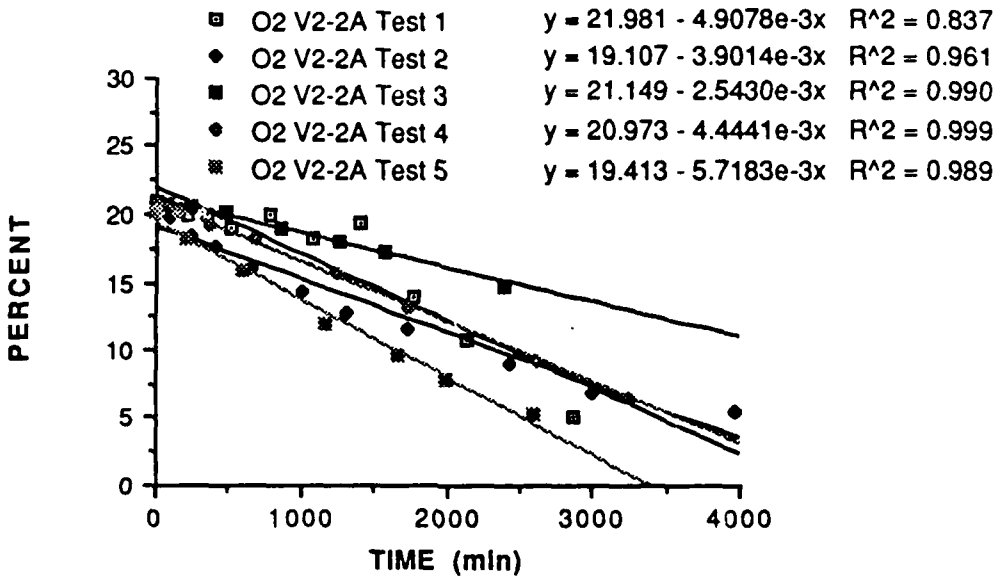

Figure 120. Zero order plot of O_2 consumption measured at V2-2A.

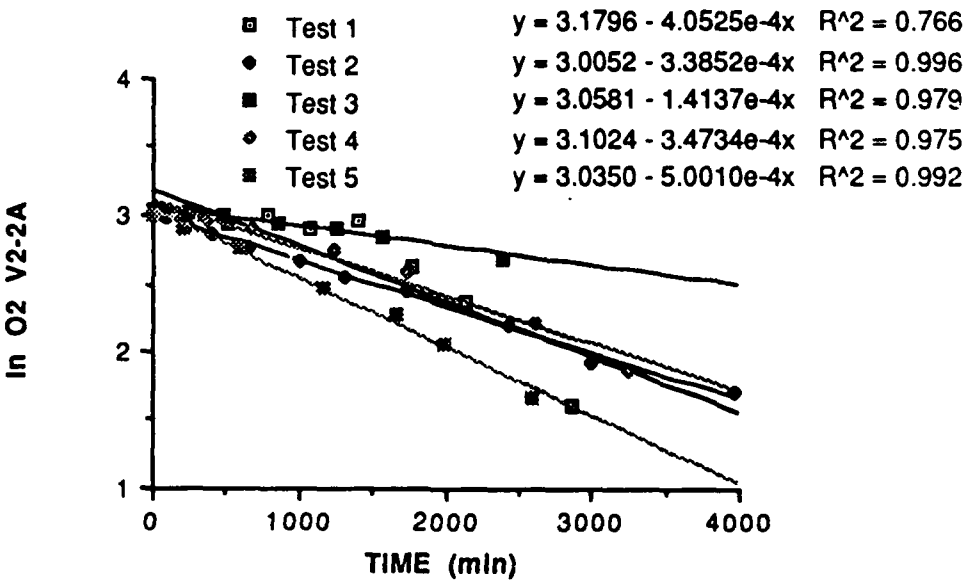

Figure 121. First order plot of O_2 consumption measured at V2-2A.

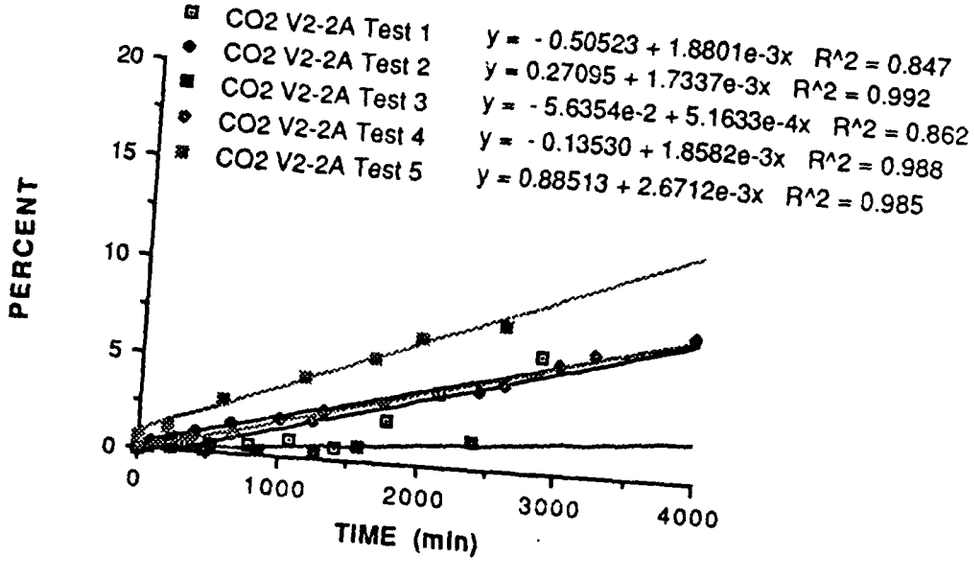

Figure 122. Zero order plot of CO_2 production measured at V2-2A.

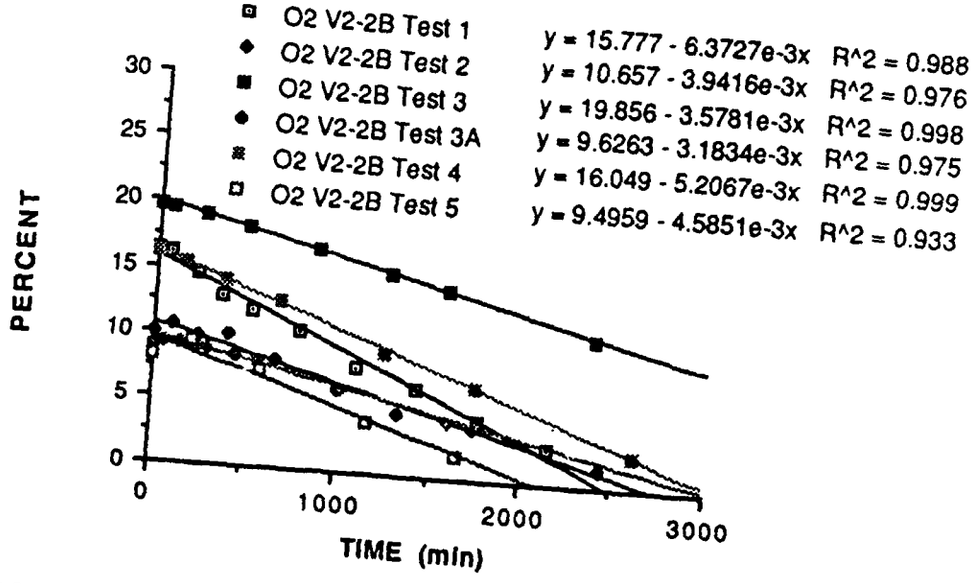

Figure 123. Zero order plot of O_2 consumption measured at V2-2B.

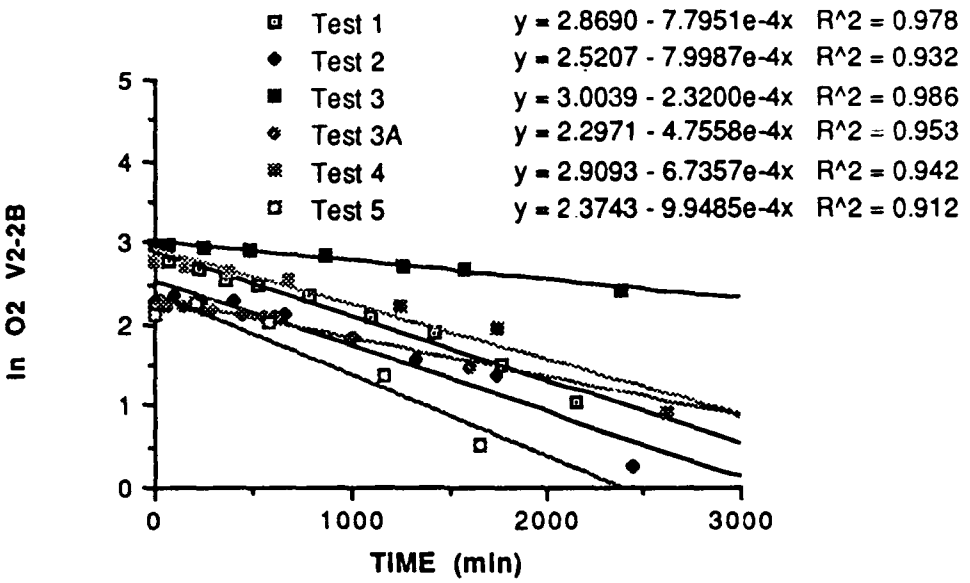

Figure 124. First order plot of O_2 consumption measured at V2-2B.

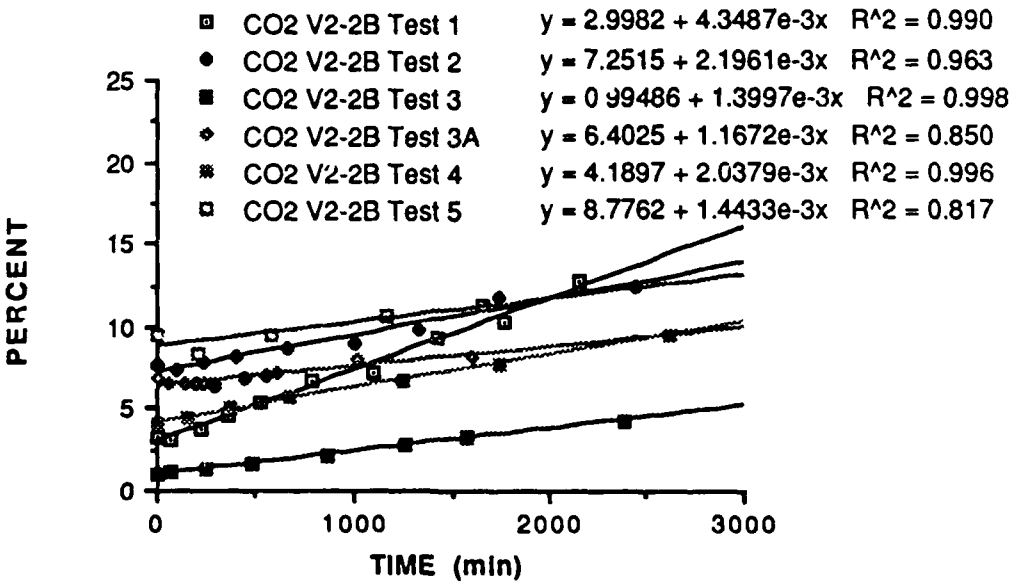

Figure 125. Zero order plot of CO_2 production measured at V2-2B.

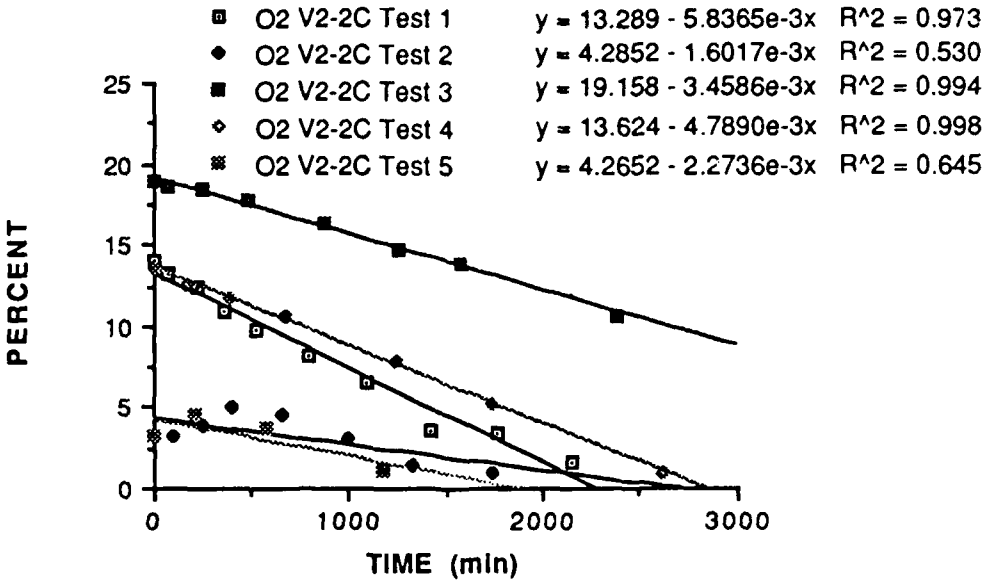

Figure 126. Zero order plot of O_2 consumption measured at V2-2C.

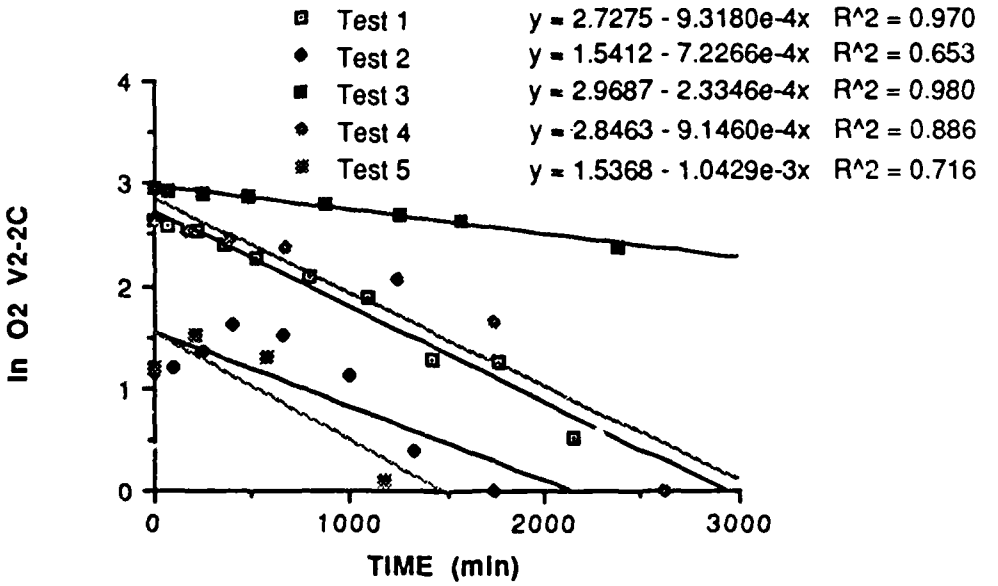

Figure 127. First order plot of O_2 consumption measured at V2-2C.

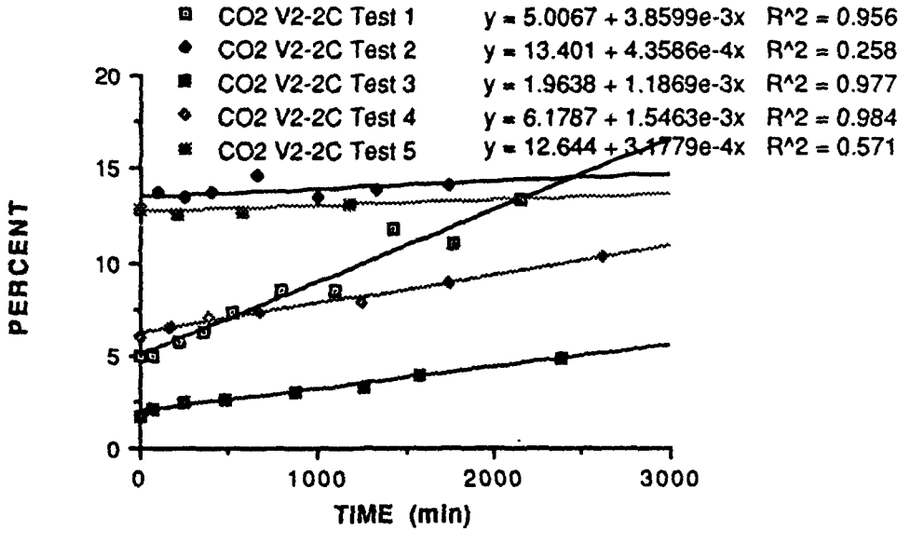

Figure 128. Zero order plot of CO_2 production measured at V2-2C.

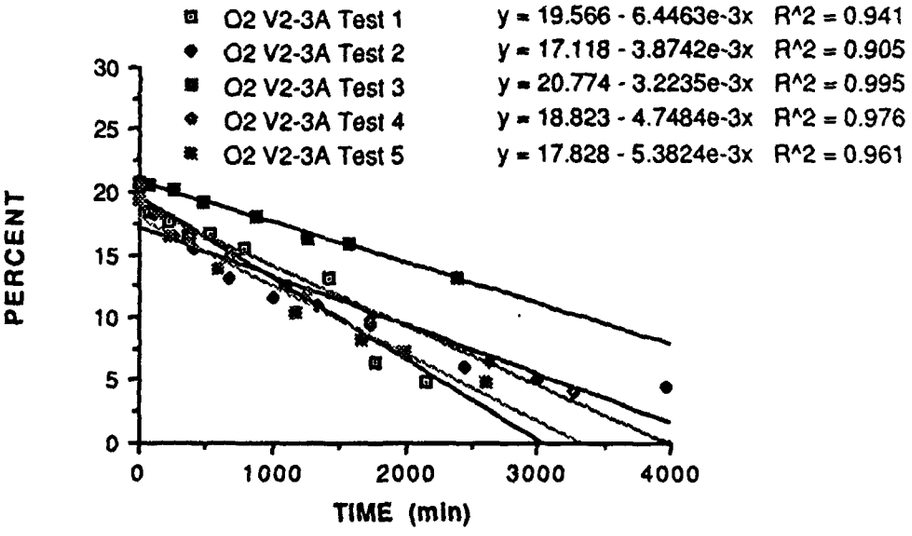

Figure 129. Zero order plot of O_2 consumption measured at V2-3A.

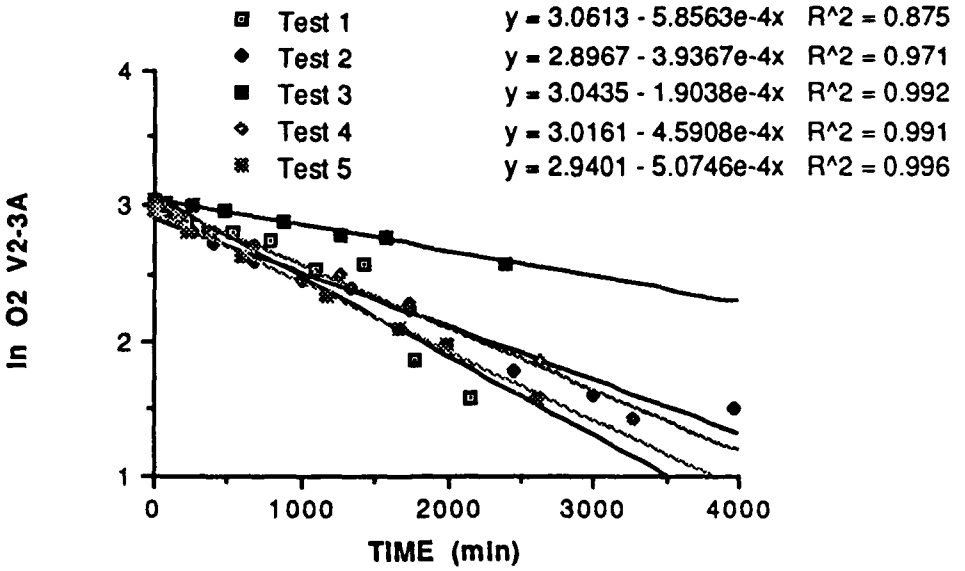

Figure 130. First order plot of O_2 consumption measured at V2-3A.

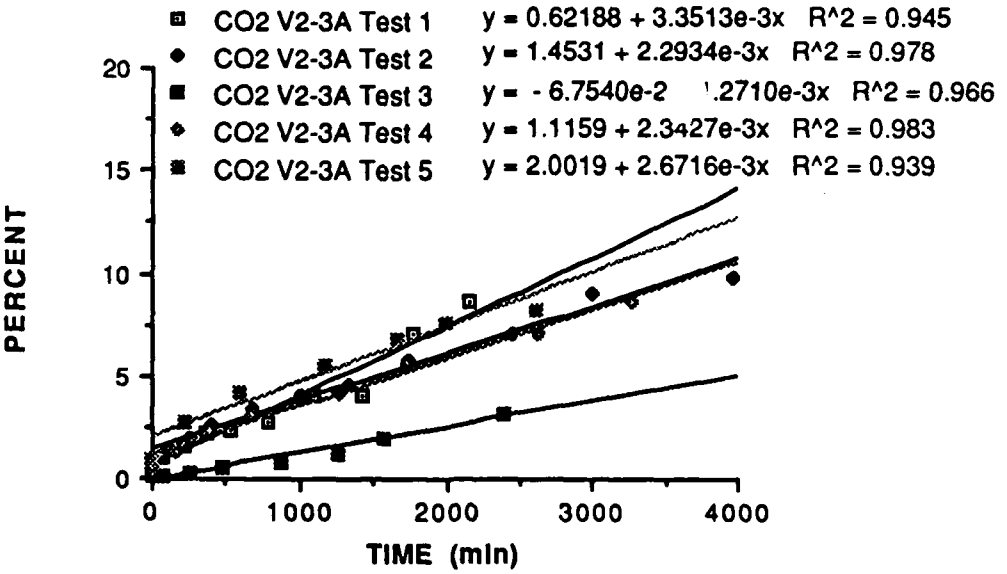

Figure 131. Zero order plot of CO_2 production measured at V2-3A.

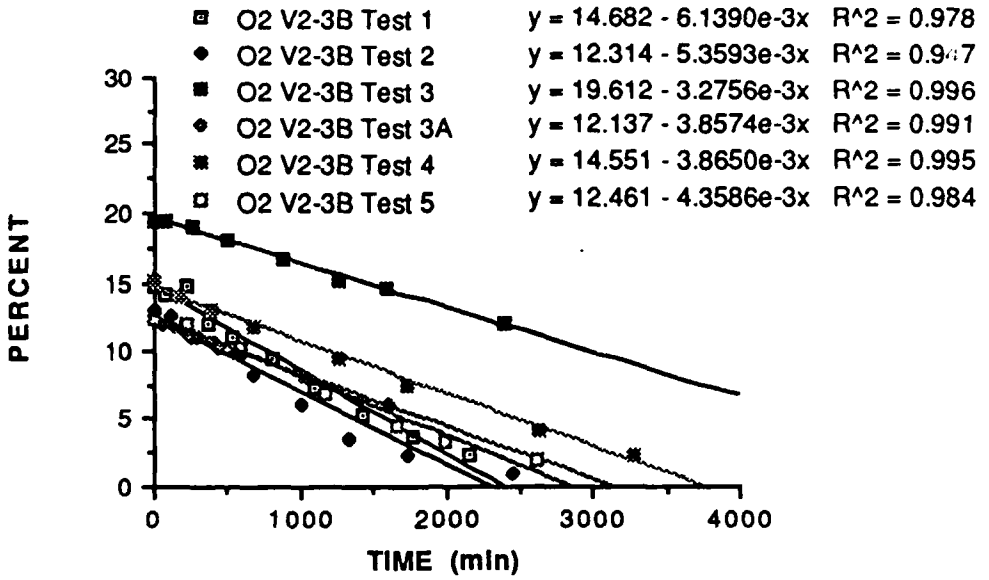

Figure 132. Zero order plot of O_2 consumption measured in V2-3B.

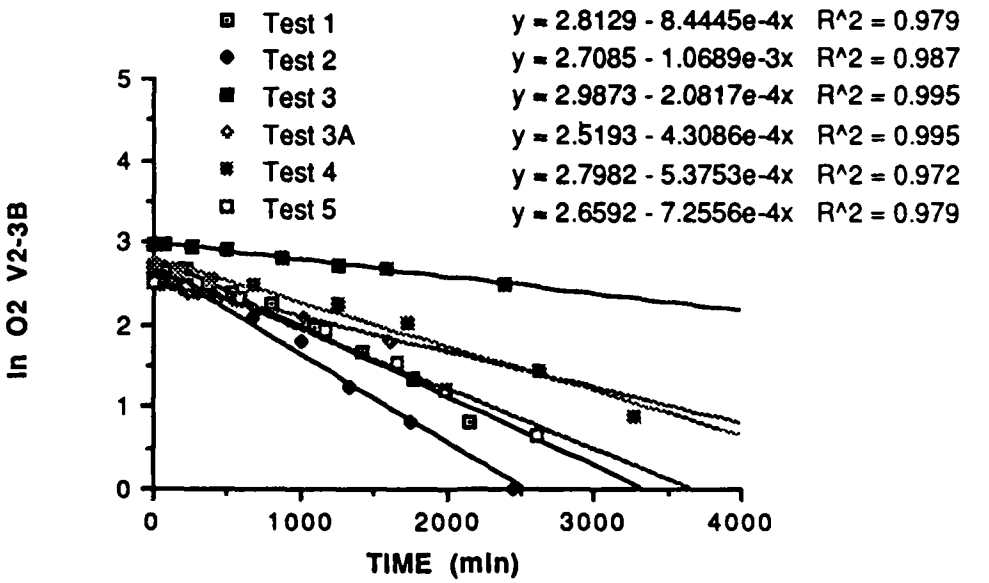

Figure 133. First order plot of O_2 consumption measured at V2-3B.

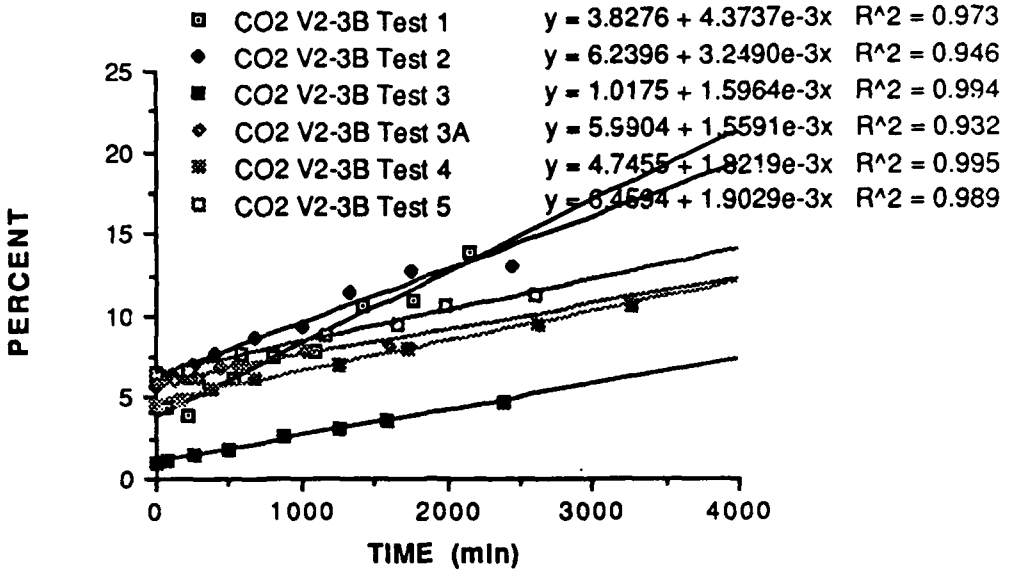

Figure 134. Zero order plot of CO_2 production measured at V2-3B.

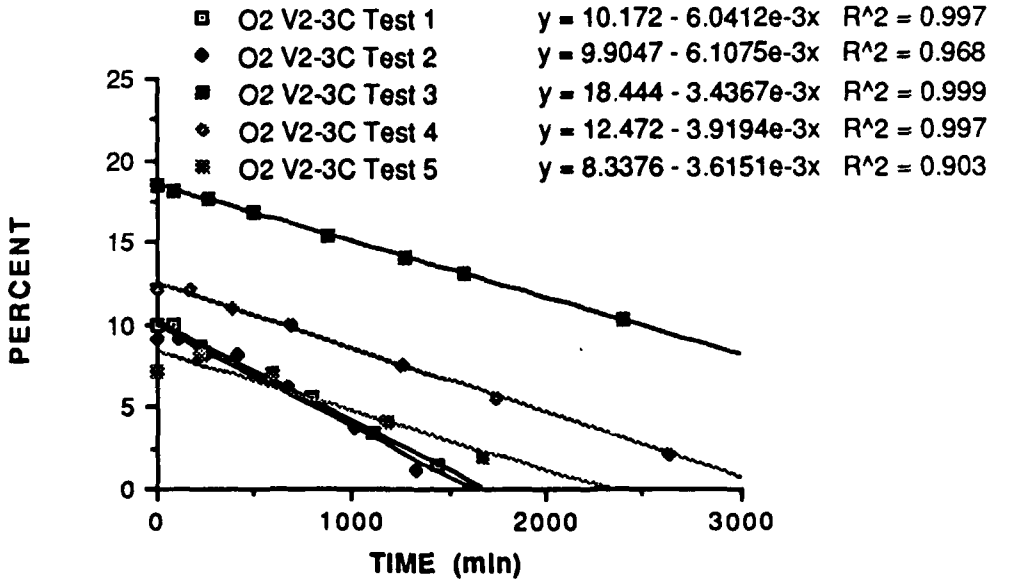

Figure 135. Zero order plot of O_2 consumption measured at V2-3C.

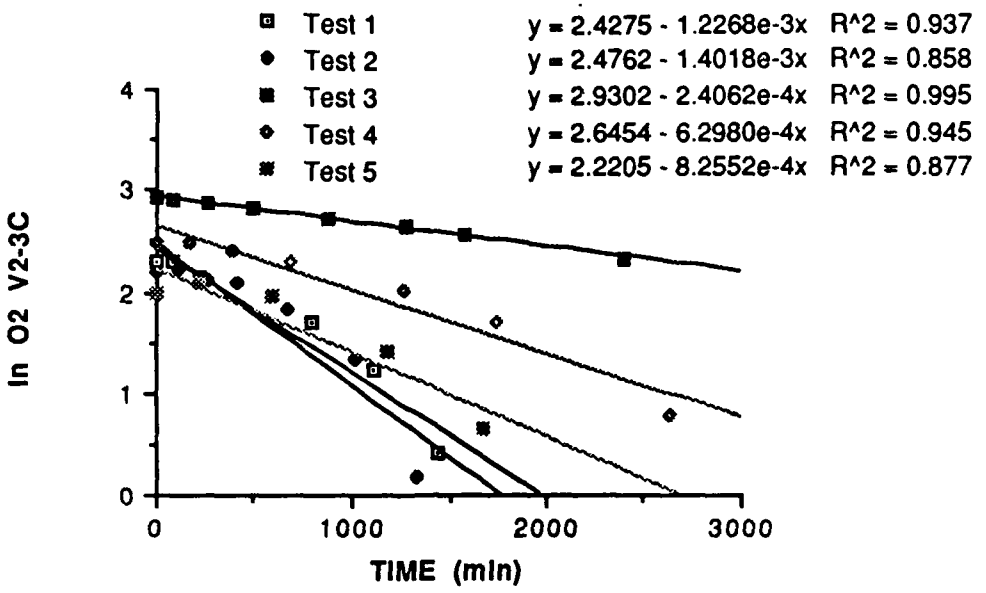

Figure 136. First order plot of O_2 consumption measured at V2-3C.

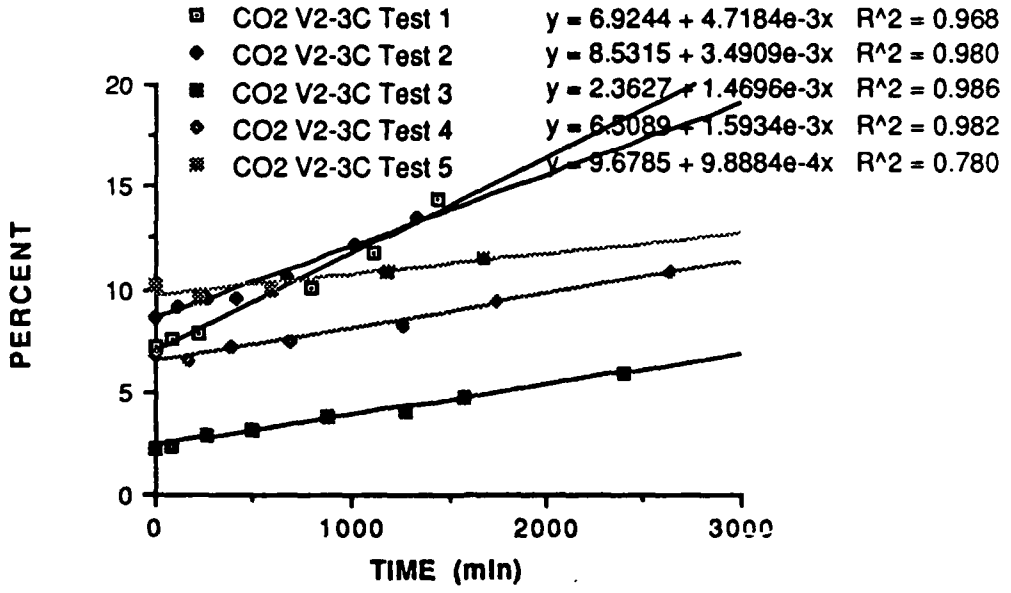

Figure 137. Zero order plot of CO_2 production measured at V2-3C.

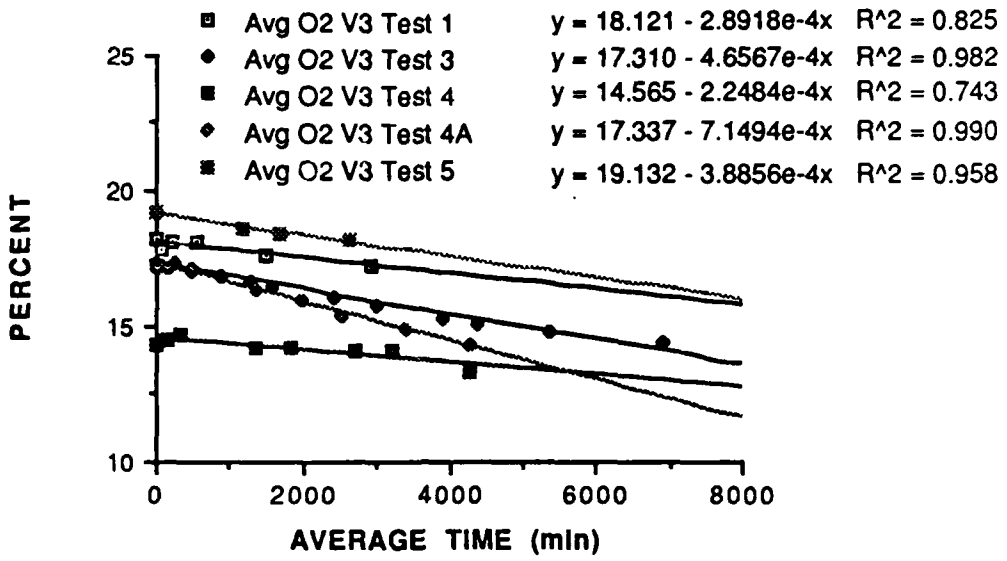

Figure 138. Zero order plot of average O_2 consumption measured at V3.

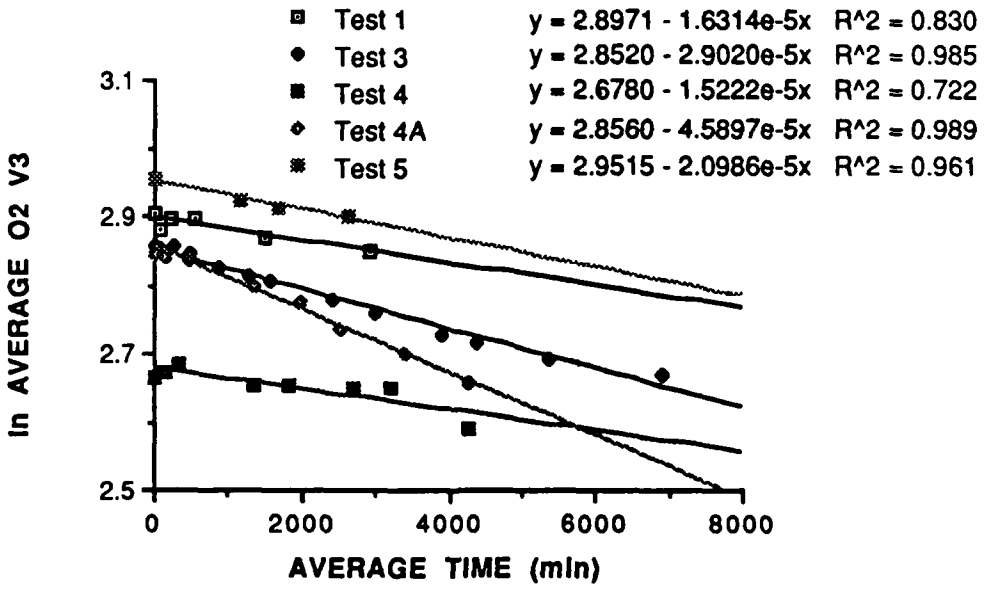

Figure 139. First order plot of average O_2 consumption measured at V3.

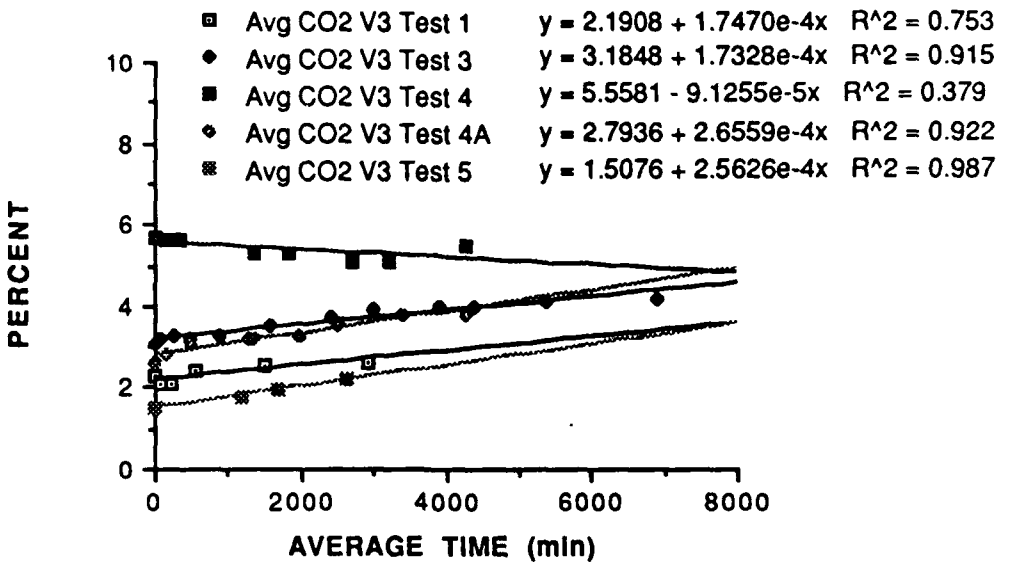

Figure 140. Zero order plot of average CO_2 production measured at V3.

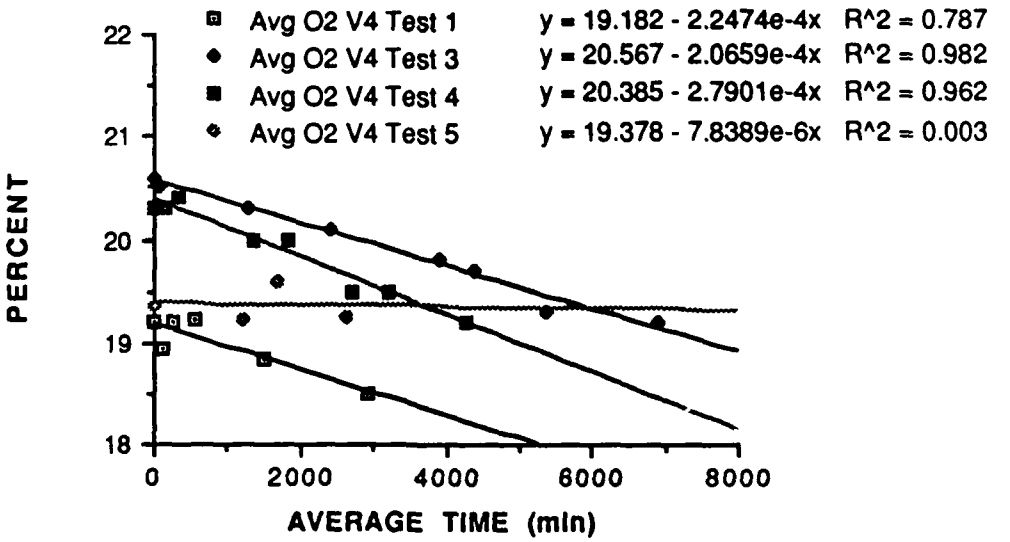

Figure 141. Zero order plot of average O_2 consumption measured at V4.

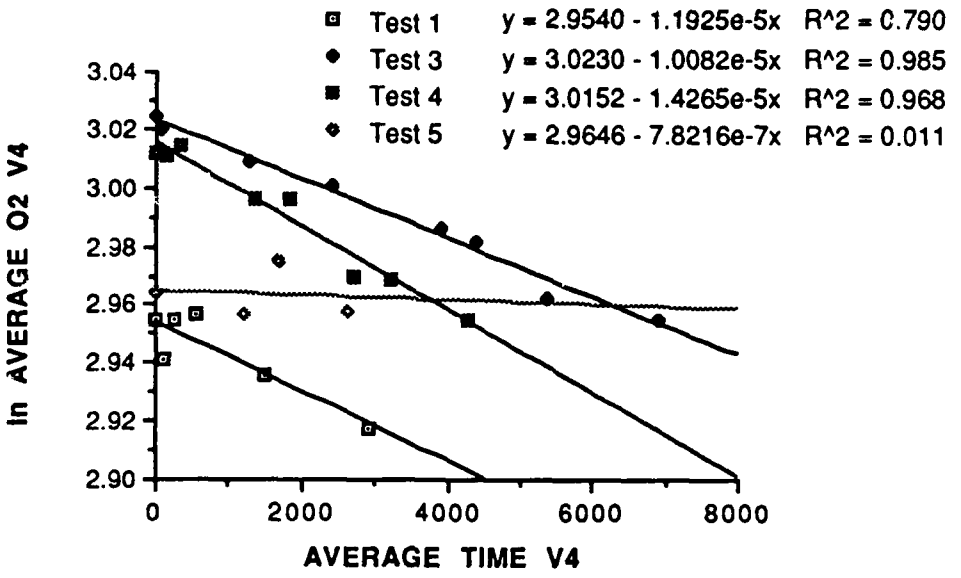

Figure 142. First order plot of average O_2 consumption measured at V4.

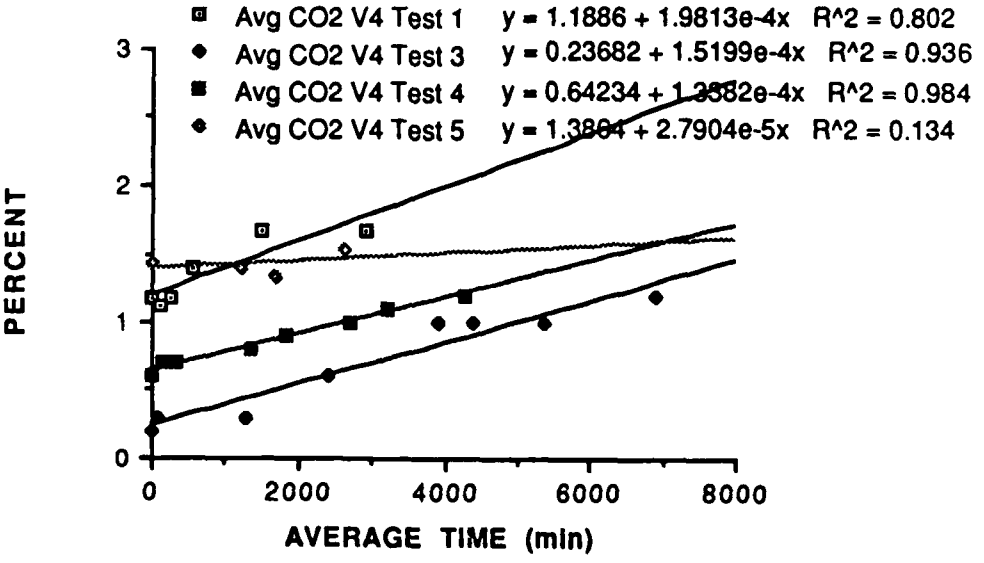

Figure 143. Zero order plot of average CO_2 production measured at V4.

Appendix K

Normalized Plots of Respiration Test Data

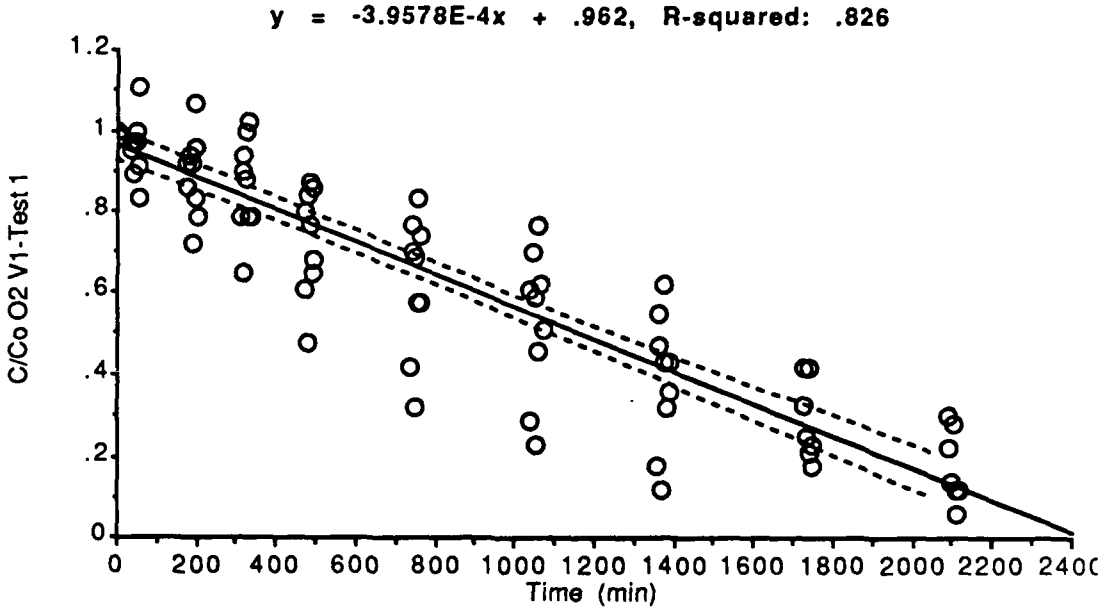

Figure 144. Regression of normalized data and 95% confidence interval for Treatment Plot V1 Test 1.

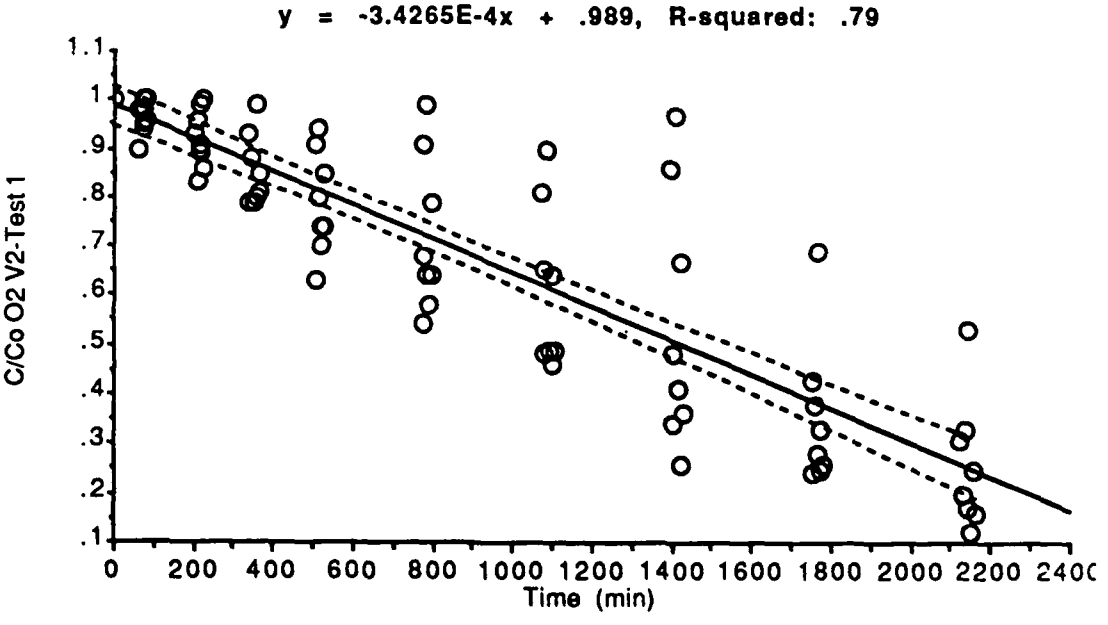

Figure 145. Regression of normalized data and 95% confidence interval for Treatment Plot V2 Test 1.

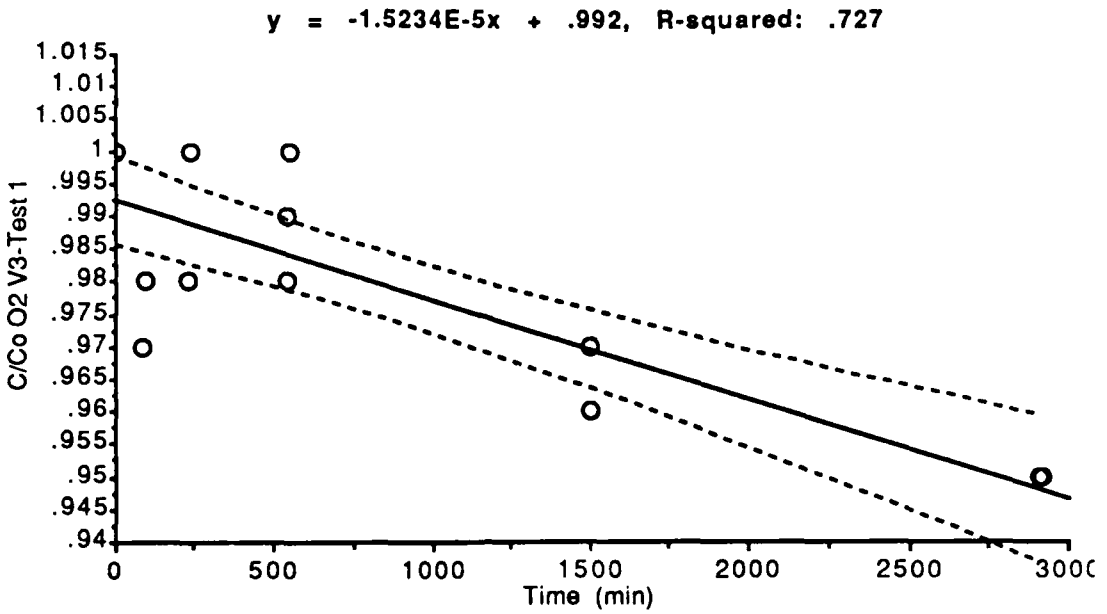

Figure 146. Regression of normalized data and 95% confidence interval for Treatment Plot V3 Test 1.

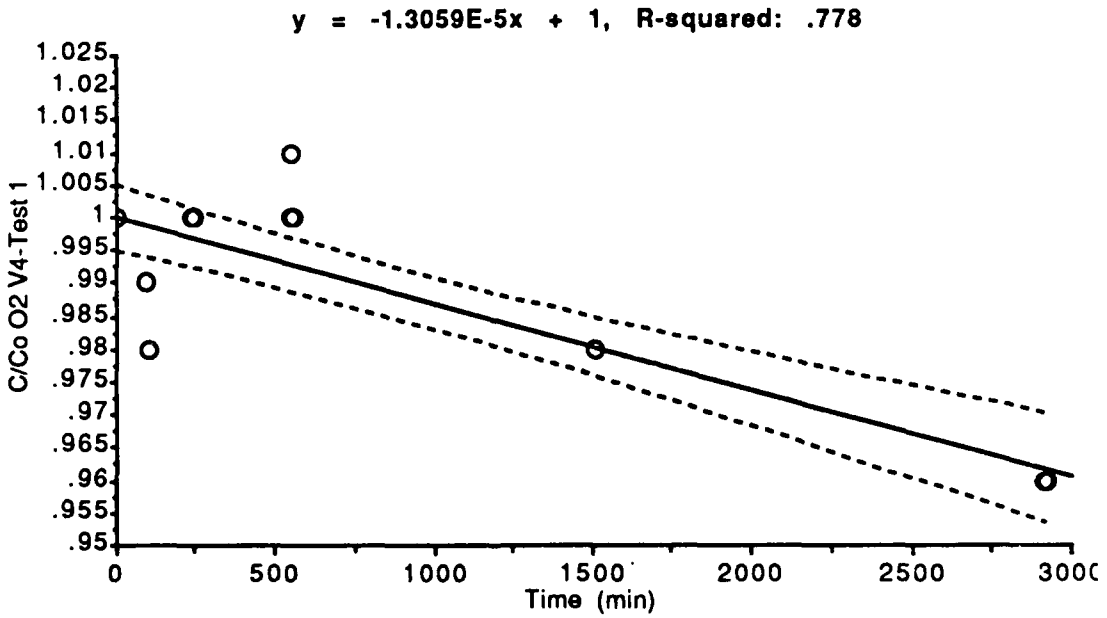

Figure 147. Regression of normalized data and 95% confidence interval for Treatment Plot V4 Test 1.

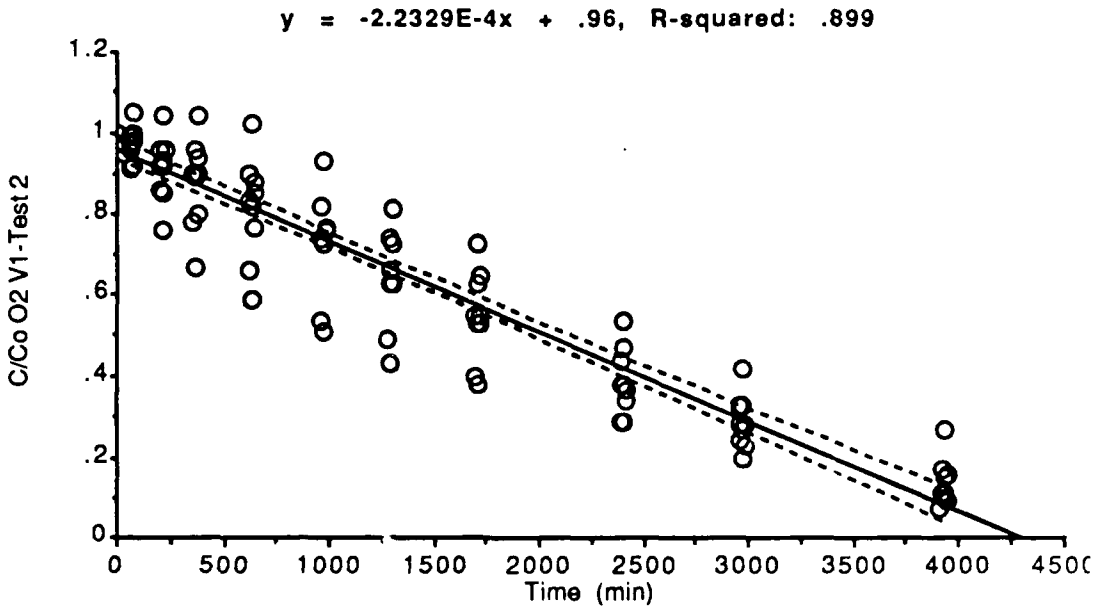

Figure 148. Regression of normalized data and 95% confidence interval for Treatment Plot V1 Test 2.

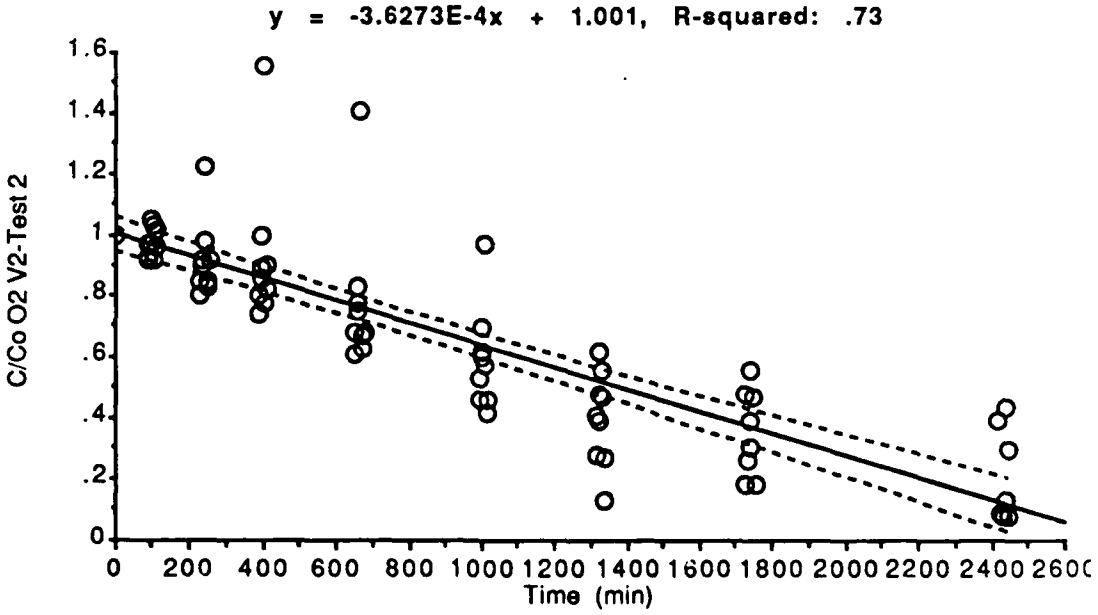

Figure 149. Regression of normalized data and 95% confidence interval for Treatment Plot V2 Test 2.

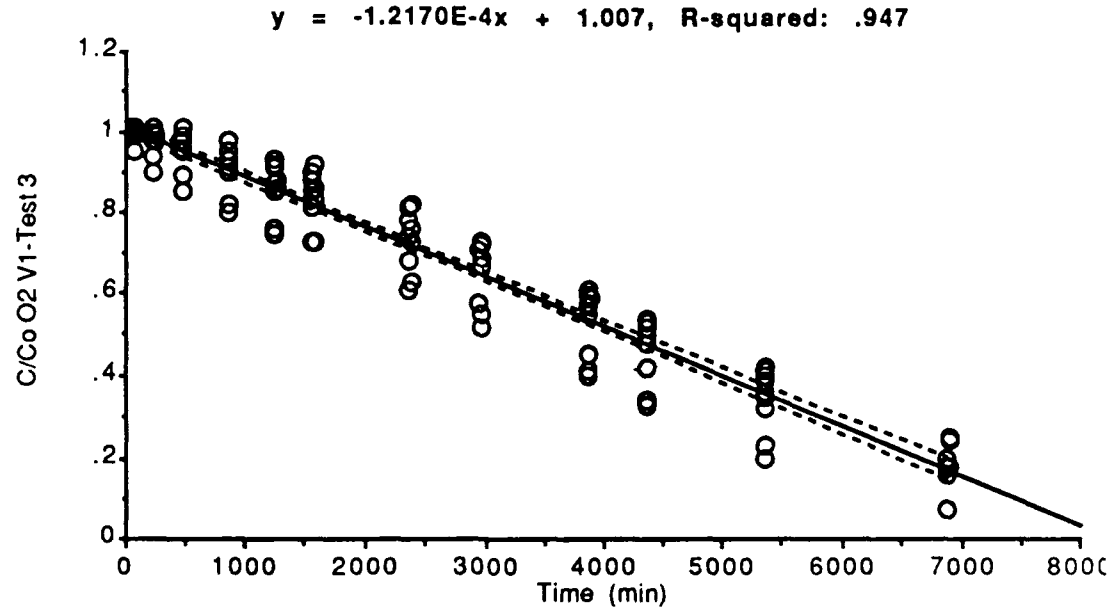

Figure 150. Regression of normalized data and 95% confidence interval for Treatment Plot V1 Test 3.

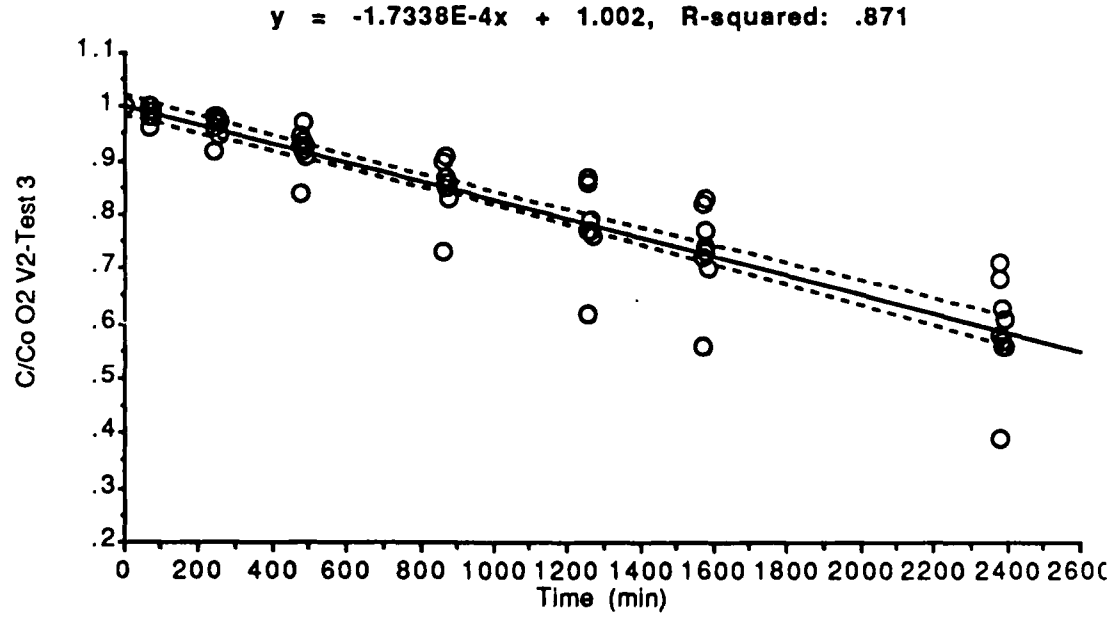

Figure 151. Regression of normalized data and 95% confidence interval for Treatment Plot V2 Test 3.

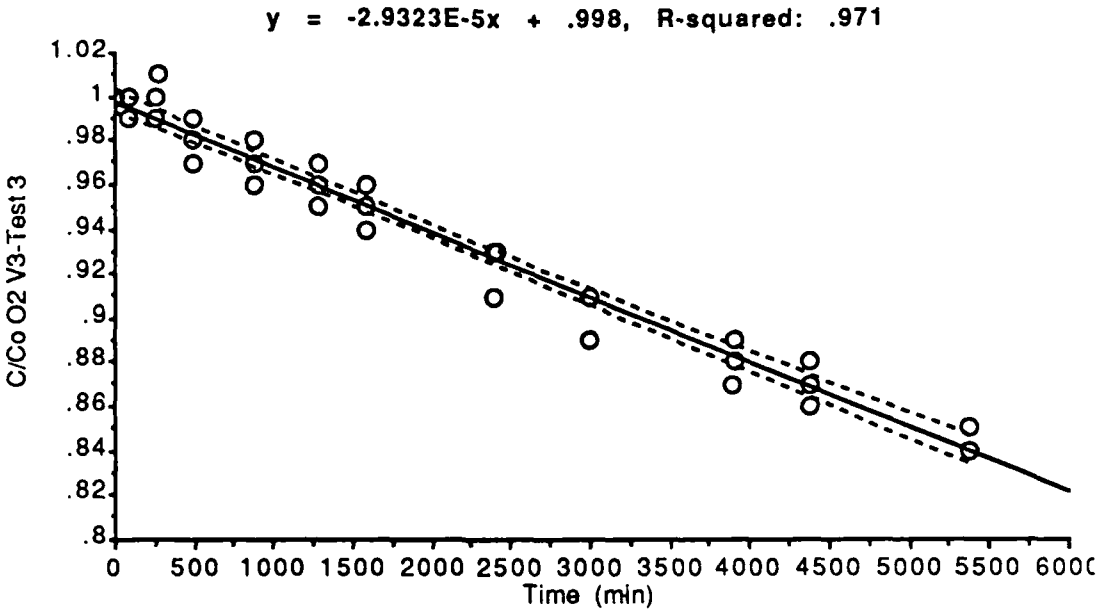

Figure 152. Regression of normalized data and 95% confidence interval for Treatment Plot V3 Test 3.

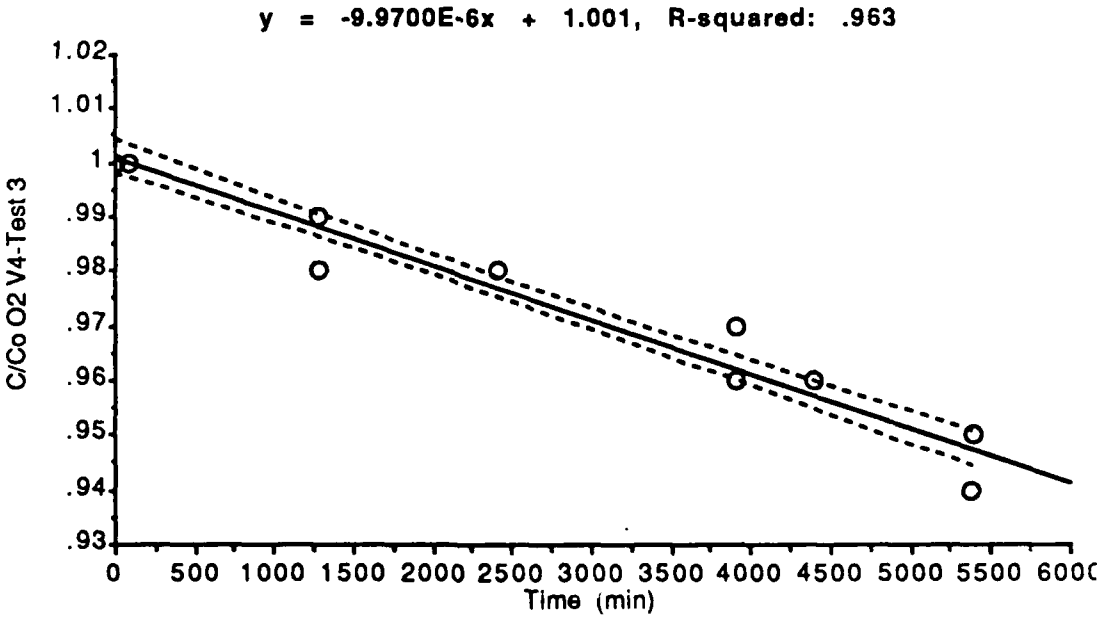

Figure 153. Regression of normalized data and 95% confidence interval for Treatment Plot V4 Test 3.

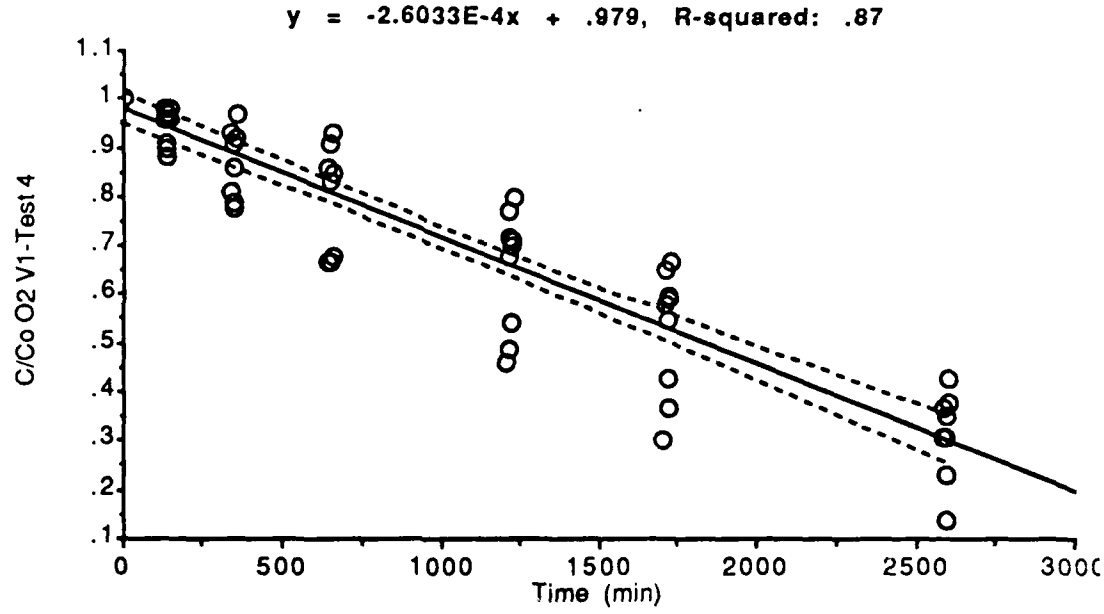

Figure 154. Regression of normalized data ar 95% confidence interval for Treatment Plot V1 Test 4.

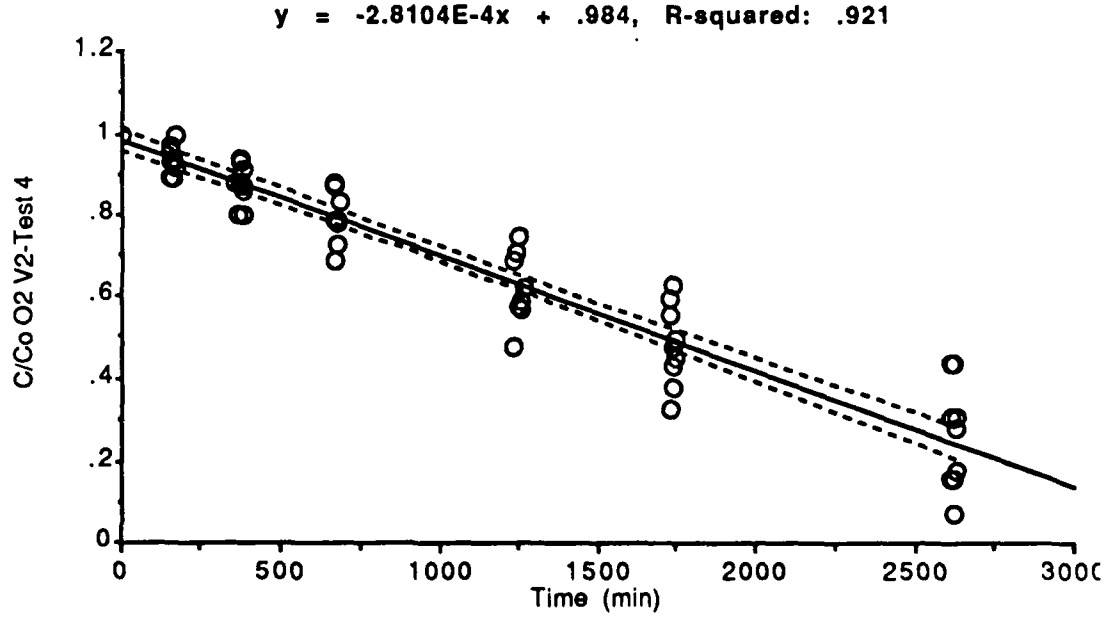

Figure 155. Regression of normalized data and 95% confidence interval for Treatment Plot V2 Test 4.

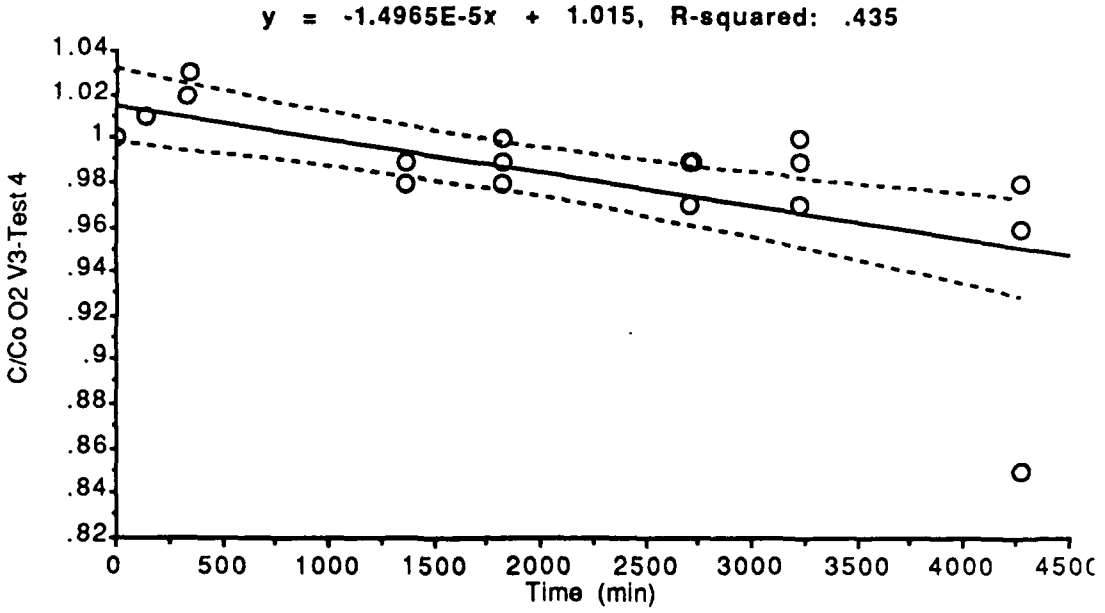

Figure 156. Regression of normalized data and 95% confidence interval for Treatment Plot V3 Test 4.

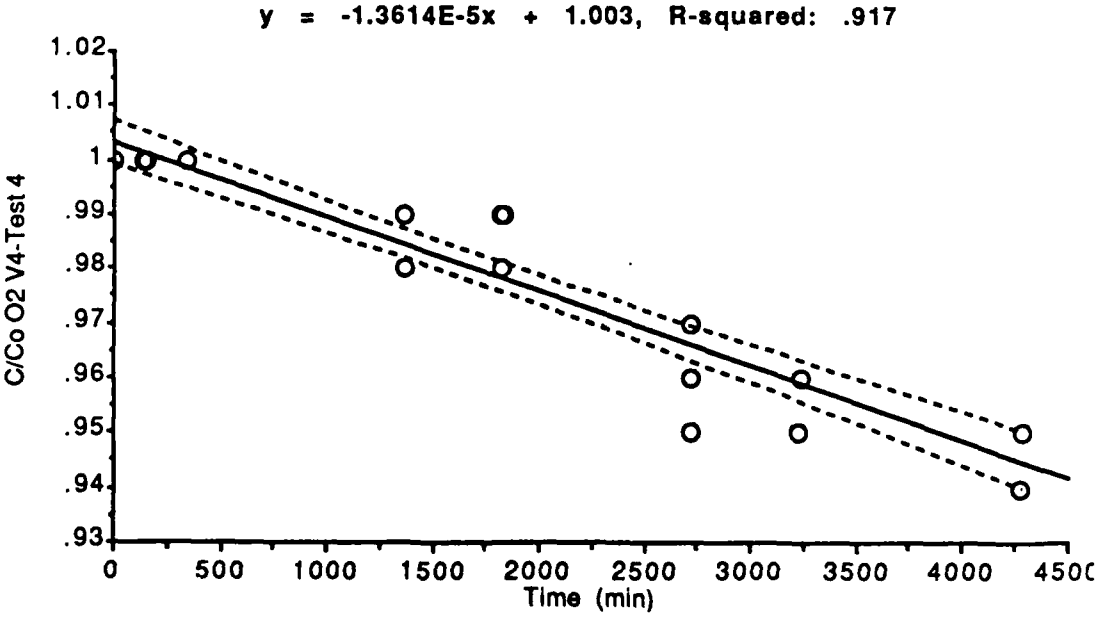

Figure 157. Regression of normalized data and 95% confidence interval for Treatment Plot V4 Test 4.

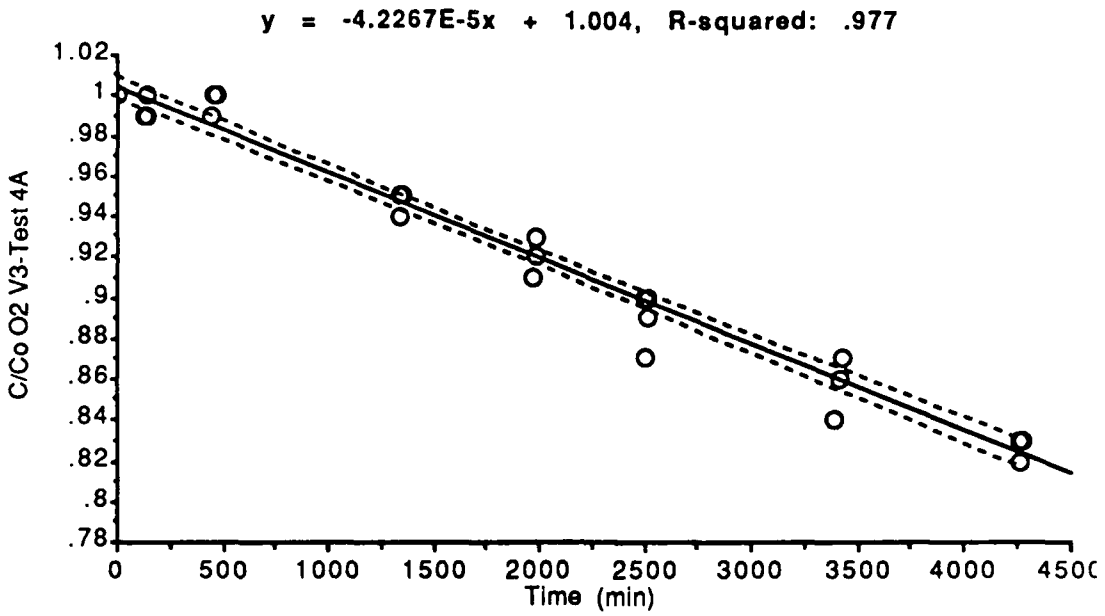

Figure 158. Regression of normalized data and 95% confidence interval for Treatment Plot V3 Test 4A.

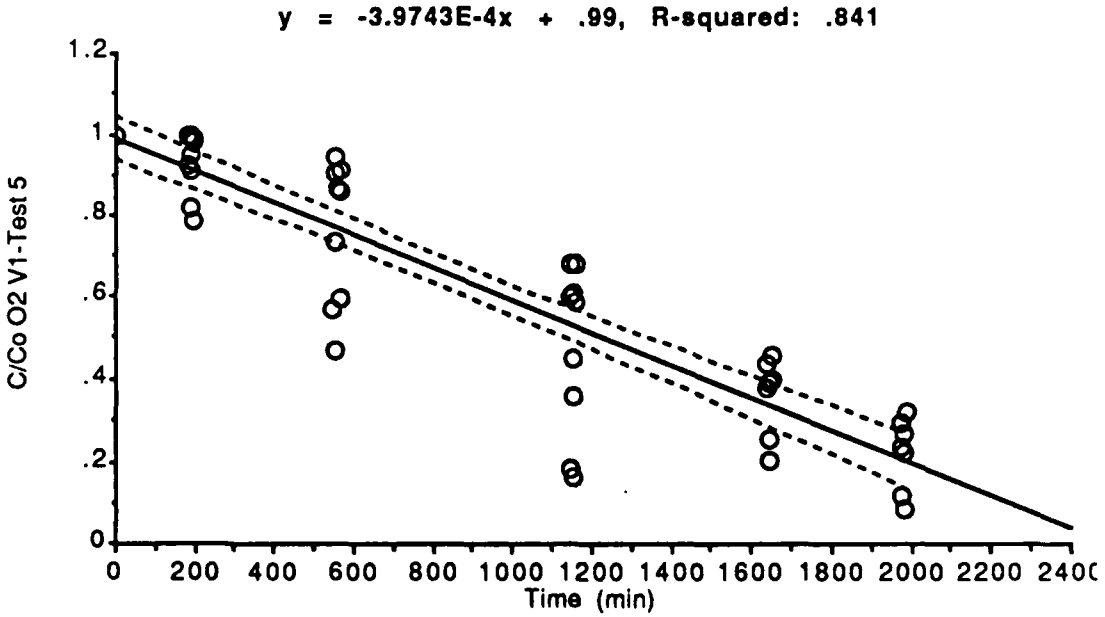

Figure 159. Regression of normalized data and 95% confidence interval for Treatment Plot V1 Test 5.

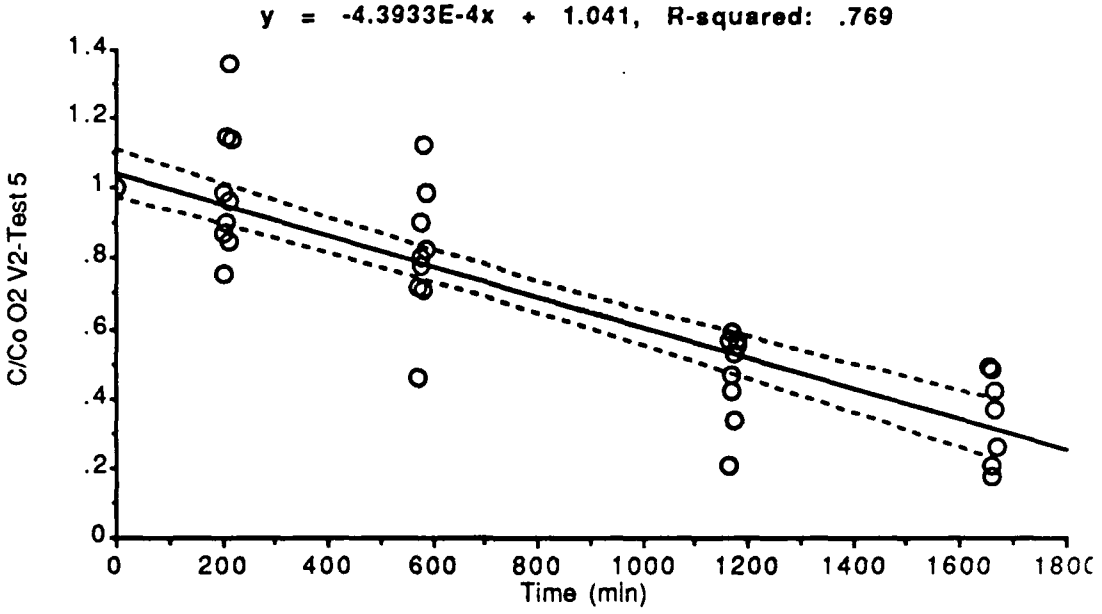

Figure 160. Regression of normalized data and 95% confidence interval for Treatment Plot V2 Test 5.

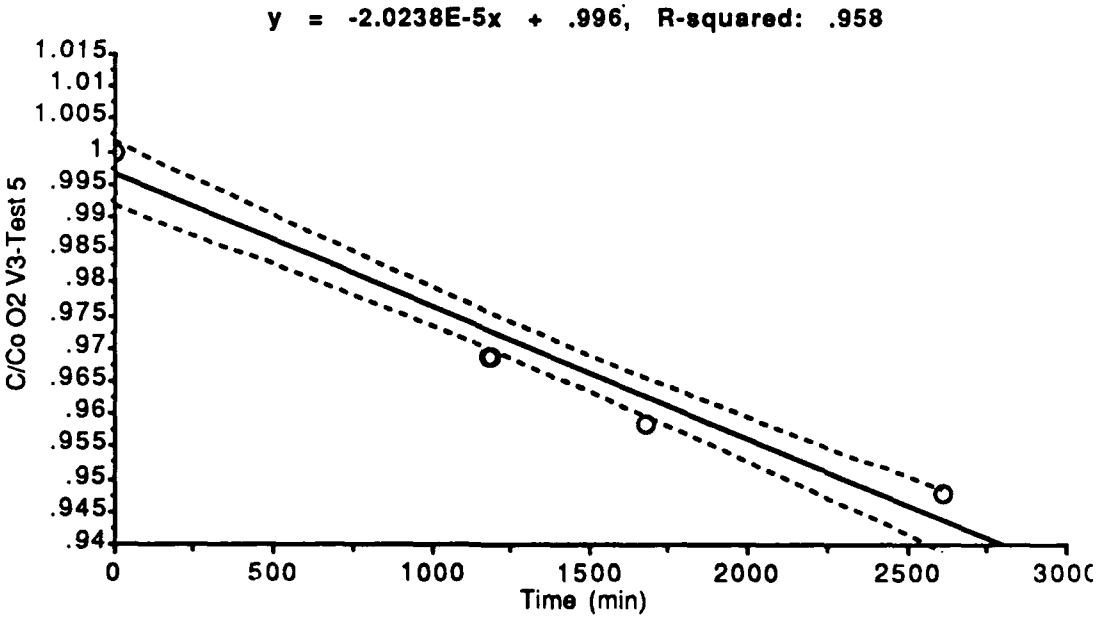

Figure 161. Regression of normalized data and 95% confidence interval for Treatment Plot V3 Test 5.

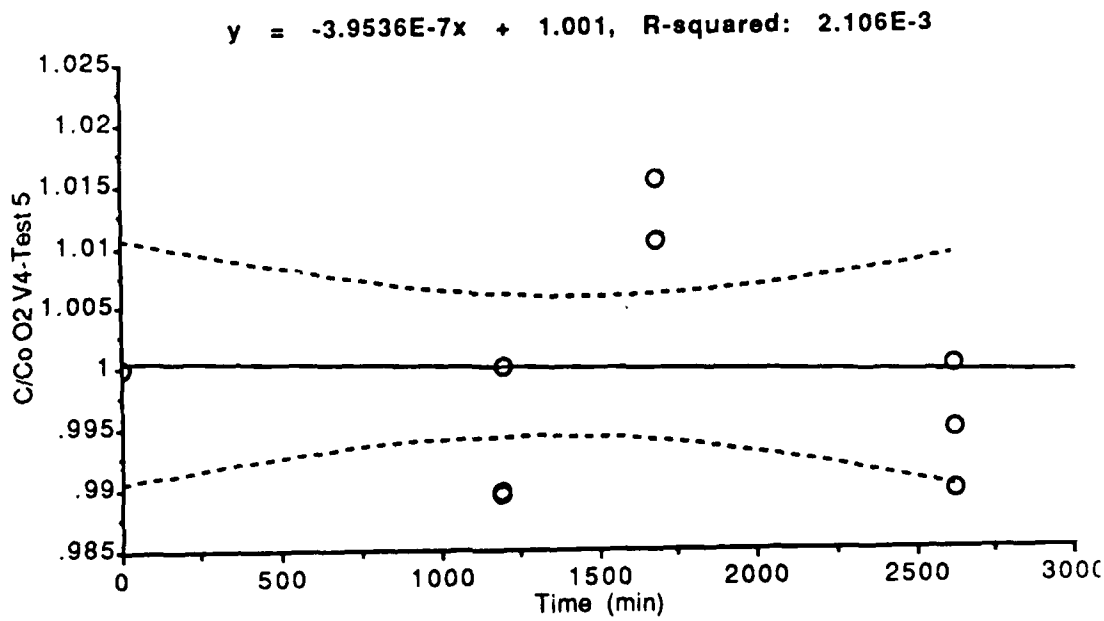

Figure 162. Regression of normalized data and 95% confidence interval for Treatment Plot V4 Test 5.

Appendix L

Soil Moisture Content Analyses

(% by weight)

Table 30. Summary of soil moisture content by weight.

Location	Initial Samples Sept.,89 %	Dec., 1989 Samples %	Final Samples Apr., 90 %	Location	Initial Samples Sept.,89 %	Dec., 1989 Samples %	Final Samples Apr., 90 %	Location	Initial Samples July,89 %	Final Samples Apr., 90 %	Location	Initial Samples July,89 %	Final Samples Apr., 90 %
V1-1, 1'	12.1		11.9	V2-1, 1'	14.43		19.2	V3B, 1'	7.77	6.3	V4B, 1'	5.41	3.9
V1-1, 2'	10.55		6.5	V2-1, 2'	6.88		5.6	V3B, 2'	19.08	4.2	V4B, 2'	7.88	3.6
V1-1, 3'	4.84		7.2	V2-1, 3'	5.92		4.3	V3B, 3'	17	13.1	V4B, 3'	20.02	9.8
V1-1, 4'	8.37		5.2	V2-1, 4'	6.42		6.7	V3B, 4'		19.3	V4B, 4'		16.7
V1-1, 5'	19.8		18.4	V2-1, 5'	20.03		18.3	V3B, 5'		18.8	V4B, 5'		19.5
V1-1, 6'	22		18.8	V2-1, 6'	18.85		18.6						
V1-1, 7'	22.09		24.6	V2-1, 7'	18.38		23.8						
V1-2, 1'	9.67		7.4	V2-2, 1'	15.45		7.1						
V1-2, 2'	8.63		5.5	V2-2, 2'	9.55		9.2						
V1-2, 3'	5.7		4.2	V2-2, 3'	5.79		4.5						
V1-2, 4'	5.26		5.8	V2-2, 4'	12.94		10						
V1-2, 5'	16.85		18.9	V2-2, 5'	18.73		20.1						
V1-2, 6'	22.84		16.1	V2-2, 6'	16.98		18.6						
V1-2, 7'	21.97		18	V2-2, 7'	20.11		19.8						
V1-3, 1'	5.89	9.69	6	V2-3, 1'	14.07	10.62	11.5						
V1-3, 2'	9.28	5.25	6.9	V2-3, 2'	10.77	10.92	11.3						
V1-3, 3'	4.11	5.6	7.3	V2-3, 3'	5.94	3.96	4.4						
V1-3, 4'	4.66	5.39	4.2	V2-3, 4'	9	13.62	7.9						
V1-3, 5'	16.45	17.94	18.6	V2-3, 5'	18.97	24.86	21.2						
V1-3, 6'	17.85		20	V2-3, 6'	18.15		17.7						
V1-3, 7'	18.62		17.9	V2-3, 7'	19.85		18.9						

Table 31. Summary of soil moisture content (by weight) statistics.

Location	Average Initial Soil Moisture July/Sept., 89 (%)	Average Dec., 89 Soil Moisture (%)	Average Final Soil Moisture April, 89 (%)	Paired Students t-test Comparing Initial and Final Soil Moisture (p)
V1	7.4	6.5	6.5	0.19
SD ±	2.7	2.1	2	
V2	9.8	9.8	8.5	0.16
SD ±	3.7	4.1	4.2	
V3	13.4		5.2	0.43
SD ±	8		1.5	
V4	6.6		3.8	0.28
SD ±	1.8		0.2	